

GREAT INDUSTRIAL EXHIBITION DUBLIN

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THE GREAT INDUSTRIAL EXHIBITION OF IRELAND.



We have already detailed in this Journal, the history of the Exhibition—so creditable in every way to Ireland and to Irishmen. Before entering more minutely into a description of some of the many interesting articles that challenge attention, we may

be permitted shortly to describe the ceremonial observed on the opening of the Exhibition. At half-past eleven o'clock on Thursday, the 12th of May, the carriages of the Knights and Officers of the most illustrious order of St. Patrick, assembled in the upper Castle-yard to await the arrival of his Excellency the Lord-Lieutenant from the Vice-Regal Lodge, Phoenix-park. On the arrival of his Excellency a procession was formed, which proceeded through the lower Castle-gate, by Dame-street, College-green, Grafton-street, Nassau-street, Leinster-street, and Clare-street, to the grand entrance to the Exhibition in Merrion-square. The streets through which the procession passed were lined with troops, and the carriages proceeded in the following order:—

Carriages of the Knights and Officers of the most illustrious Order of St. Patrick.
His Excellency's Household.
His Excellency.

On the arrival of the Lord-Lieutenant, he was received by a guard of honour, and several military bands were in attendance. His Excellency was received by the members of the Executive Committee, and a procession was formed as follows:—

Members of the Committee, Two and two.
Aides-de-Camp.
Officers of the Order of St. Patrick.
Knights of the Most Illustrious Order of St. Patrick,
Two and two, according to their Stalls, wearing the Collar of the Order.
His Excellency's State Household.
His Excellency the Lord-Lieutenant.
Grand Master of the Illustrious Order, wearing the Collar of the Order, and the Brilliant Diamond Badge and Star of Grand Master.
Her Excellency The Countess of St. Germans.
Aides-de-Camp.

In this order they proceeded, con-

ducted by the Executive Committee, two and two, to the Throne prepared for His Excellency. While the Procession moved up the Middle Avenue of the Centre Hall to the Dais, the Orchestra, which consisted of 1000 performers, played The National Anthem. Their Excellencies having taken their seats, the Orchestra performed The Hundredth Psalm.

The orchestra subsequently performed Handel's Coronation Anthem; Mozart's motett, "O God! when thou appearest!" the Hallelujah Chorus of Beethoven; Mendelssohn's Grand March from "Athalia;" and the "Hymn of Praise," also by Mendelssohn; after which, by his Excellency's command, the Ulster King-of-Arms declared THE EXHIBITION OPEN! The orchestra subsequently performed Haydn's "The Heavens are telling," and the "Hallelujah Chorus," by Handel, concluding with the National Anthem.

Not the least interesting portion of the inauguration ceremony was the conferring upon Mr. John Benson, the architect of the noble struc-

ture in which admiring thousands were assembled, the honourable distinction of Knighthood, by his Excellency the Lord-Lieutenant. Sir John Benson, on rising from his knees, was greeted with peals of applause, which again and again rung through the building.

The Lord-Lieutenant, at the conclusion, left the Exhibition with the same ceremony as on his entrance.

The Central Hall is truly a noble apartment. It is not its extent that strikes the visitor so much as its admirable proportions. As we approach the building, we begin to dread disappointment; for the exterior neither in effect nor extent gives us the least idea of the size or beauty of the interior. It is not until we have walked from the entrance to the raised dais opposite, at a distance of 425 feet, that we can at all appreciate its architectural beauty. Even then it requires a practised eye to discover its real merits. This arises altogether from the total want of taste displayed in the arrangement of the hall. Indeed, we have little hesitation in saying that it would be difficult for human ingenuity to devise a worse arrangement. Let us suppose the visitor to have mounted the dais for the purpose of seeing the hall, with its varied contents, to advantage. Before him, to the right, where we should naturally expect to find consoles covered over with *bijouterie* and gems of art, is an elevated platform, upon which, packed close to one another, like sheep in a pen, are a number of pianos, and two or three harps. As the space between these is not sufficient for persons to pass, this almost solid square of pianos is raised round. If we endeavour to look further in this direction, our view is interrupted by Chance's lighthouse. If we endeavour to look down the centre of the hall, we find it occupied by a large square heavy framework of iron, with a striped tent-cloth covering, surmounted with an iron urn at the top of the tent-cloth, and filled inside with grates and fenders. This unsightly erection was, probably, intended for a summer-house. It is exhibited by the Colebrookdale Iron Company, and certainly reflects neither credit on the taste of the artist who designed it, nor on those who placed it in such a manner as completely to mar the effect of this beautiful hall. Close to it, and also at a distance of some feet from the side compartment, stands a heavy and conspicuous structure—belonging to Houldsworth, of Manchester—containing a fine collection of rich fabrics for furniture and ecclesiastical decoration. This large trophy is close to the erection of the Coalbrookdale Company; and the close contiguity of these two, and several other things equally clumsy, have nearly the same effect in displaying the proportions of the hall that a wooden partition would have right across its centre. If we look to the north side of the hall, we find a large square of timber, faced with grates and fenders—exhibited by Benham and Sons, London—but relieved by a few small statues round it, and a large group in its centre. The sculpture, fortunately, gives an air of lightness to the whole, which could scarcely have been expected. Grubb's telescope, a glass case of Price's candles, another group of pianos, and a case of saddlery, complete the *coup d'œil*.

The arrangement of the platform at the end of the Main Hall is much better. Groups of sculpture, statues, and busts are admirably disposed. In the centre of the platform is a beautiful piece of plate, exhibited by her Majesty. It is manufactured by R. and S. Garrard, and



SILVER GROUP.—FOUNTAIN TEMPLE, WITH PORTRAITS OF HORSES, THE PROPERTY OF HER MAJESTY.

represents a fountain temple, with Arabs and horses round it. This fine piece of plate is of silver—in some places bright or frosted, enameled or gilt, and the design is beautifully appropriate and interesting. From the scarcity of water in the desert, and from this precious element furnishing in those burning regions the first necessary of life, the spots where it flows from the earth have been hallowed for ages. The ancients in their veneration gave them poetic and religious attributes, and displayed the high estimation in which they were held, either by erecting monuments in their immediate vicinity, or by sculpturing the rock from whence the water flowed. Hence has originated the idea of the base of this work; and the structure which surmounts it, comparatively modern, is supposed to be raised on the spot for ages the object of such veneration. The carved rock is partially buried by its debris, and by the accumulation of sand from the desert. Around the bases of the columns thus formed from the solid rock flows a rill, to which the flamingo is attracted. On the opposite side, represented as dry and sandy, a vulture, gorged, has retired within the recess of the rock, while two sporting lizards are seemingly conscious of the harmless condition of the bird. The Doura palm, banana, and different plants of the East characterise the fertility of the spot. The Moorish architecture of the middle ages, in its nature essentially religious—the offspring of the Koran, and the Gothic of the Bible—has been chosen for the temple; in which flowers, porcelain mosaics, and elaborate ornaments were intertwined with Cufic and Arabic texts and poetic rhapsodies, which, though the latter were laudatory of the magnificence and generous virtues of the possessor, yet the first were so contrived to constantly remind him that all that ministered to his happiness was the gift of God. As all representations of animal or vegetable life were strictly prohibited, the Moors were compelled to rely on the luxuriance of their imaginations, governed by mathematical ingenuity, in the construction of ever-varying and apparently fantastic ornaments, interwoven geometrically, and flowers, not drawn decidedly from nature, but as it were translated through the loom; for it would seem that the Arabs, in changing their wandering for a settled life, in striking their tent to plant it in a form more solid, had transferred the luxuriant shawls and hangings of cashmere which had adorned their former dwellings to their new, changing tent-poles for columns, and silken tissue for golden stucco. This structure, which represents the idea of a covered fountain, has been designed and composed in the style and spirit of the Palace of the Alhambra; the clustered columns and high springing arches being suggested by the central portico of the Palio de los Leones; and the peculiar effect which characterises the upper portion being obtained by the varied combinations of the several geometrical figures which form the stalactite pendentives of the arches, the soffits, and the supporting growth of the exterior roof; the construction of the cornice may be partly traced to the Palio de la Mesquita; and the outer roof is divided into double stages, terminating in pinnacles, to prepare the eye for the rising of the central dome. In the composition around the temple, which illustrates Arabs leading horses to water, are portraits of three beautiful animals, the property of her Majesty, presents from different Sovereigns. The grouping of both men and horses is so contrived as to be viewed with equal advantage on every side, the action of each being extremely varied. On one side a negro boy is quietly gazing on the animal he has led to the water; on another side is a horse rearing, startled by the sudden escape of his companion, while the Arab in charge is attempting to regain his hold. A Persian hound, aroused by the confusion, is in the act of barking. The original design of this piece of plate was suggested by her Majesty and Prince Albert; to embody which the full strength and artistic skill of the establishment of Messrs. Garrard was called into requisition. The credit of the group of horses and men just mentioned is due to Mr. E. Coterell, whose works of similar character have so frequently stood the test of public opinion. The Temple Fountain, with its Arabesque ornament, is the production of Mr. E. L. Percy, a native of the Sister Kingdom, and for many years well known in Dublin. This, it is presumed, will give an additional interest in the country selected by her Majesty for the first exhibition of this superb work. The base, with its remnants of ancient architecture, birds and oriental plants, were designed and modeled by Mr. W. Spencer; who, for his success in the latter, has to acknowledge much kind attention and valuable assistance from Sir W. Hooker, director of her Majesty's gardens at Kew; also from the late Superintendent of the Botanical Gardens, Calcutta.

At each side of this piece of plate stand the two cups sent to the Exhibition by the Earl of Eglinton, the late Lord-Lieutenant of Ireland: one, the Emperor's Plate, designed by Macarthy, and manufactured by Hunt and Roskell; and the other the Goodwood Cup—both won by his Lordship. At the side of one of these pieces of plate stands a pair of broken lances—one of them broken by the present Emperor of France, at the Eglinton Tournament, some years ago, when probably the Prince had but few expectations of ever attaining his present elevated position. On the platform, Mr. West, of Dublin, exhibits a case of jewellery, containing, among other things worthy of attention, a wine-cooler, made of bog-oak and mounted in silver. The silversmiths of Dublin exhibit a number of cases of jewellery, and most of their plate is well designed and manufactured. Waterhouse exhibits, among others, a silver épergne, very well executed, the principal figures being three Syrens sitting at a fountain. Acheson also exhibits some jewellery, including a silver tray and tea service, in addition to the casket of bog oak, of which we have given an engraving; it is ornamented with Irish gems, diamonds, &c., and does the manufacturer much credit. Elkinton and Mason, in this department, exhibit an unequalled collection of electro-plated, silvered, and bronzed articles. The combination of silver, gold, and bronze is novel and very beautiful. Elkinton and Mason also exhibit two very fine bronze statues, cast for the House of Lords, and a group of "The death of Tewdric the Great," designed by J. E. Thomas. All these works will require a more detailed notice when we come to treat of the departments to which they belong.

Next to the Fine Arts Hall, the Southern Hall is the most attractive to visitors. It contains specimens of the beautiful productions of France, Prussia, Austria, and Belgium, as well as the more gorgeous display of Indian and Chinese magnificence.

THE AUSTRIAN AND PRUSSIAN DEPARTMENT.

In the progress of the Irish Exhibition the King of Prussia has taken the greatest interest; and the works of art, as well as of more practical utility, from Berlin, do every credit to his patronage. The principal articles exhibited from Prussia consist of some fine castings in iron, copper, and zinc, and a few superior articles of real bronze (most of these from the Royal foundry); and a fine collection of biscuit and china. Subjoined is a Sketch of the "Alexander Vase." It is a fine specimen of iron casting, and bears a strong resemblance to bronze. It was cast at the Royal iron foundry at Berlin, and the frieze on the exterior represents the triumphant entry of Alexander into Babylon, after Thorwaldsen. It is inlaid with silver, and the inside is gilt. There is also a companion vase of smaller dimensions exhibited by his Majesty. It is also from the Royal foundry: the frieze represents the four Seasons and the Ages of Man—composed, modeled, chiseled, and inlaid with silver, by Volzgold, of Berlin. The execution of both these vases is very perfect. The King of Prussia also exhibits two copper statuettes—Frederick I., King of Prussia; and Frederick II., Elector of Brandenburg—both modelled by Stürmer, and executed by the galvano-plastic process by Winckelman, of Berlin. A vase, called the Athenian Vase, in the same

collection, without possessing much originality, merits no small praise as a fine specimen of iron casting, and displays the perfection to which that art has been brought in Berlin. Another Prussian artist, Wolff, contributes a group of a Fox and Ducks, well conceived, and modeled and cast in bronze by himself; and Wickmann, of Munich, gives a specimen of a different style in his elaborate Shield of Hercules, which is gilt and varnished in an artistic manner. The shield is modeled as nearly as possible after Homer's description. In bronze casting Wolff supplies a Dog of the Swedish race, the size of life; and two groups—a Lion startled by a Snake, and a Stag killed by a Lion—both modeled by himself, and chiseled by Moncke. There are also two small groups by Müller that are well executed—a Boy and Newfoundland Dog, and a Girl with a Bull-dog, both cast by Fisher. Fisher also sends a number of small statuettes and groups in bronze, generally copies, and possessing more or less merit; including statuettes of Ariadne, a Nun, the Madonna, and a number of others too numerous to particularise. Geiss, of Berlin, also exhibits a number of his famous zinc casts, bronzed, and scarcely distinguishable from that metal.

The specimens of China from the Royal factory at Berlin, are of no common order. The material is generally of a very superior description; and the elegant shape of the article, not less than the execution of the paintings that adorn it, often deserves high commendation. Subjoined are sketches of a pair of vases as specimens. The samples of biscuit are for the most part busts, and fail to attract as much attention as perhaps they are entitled to.

Bucker, of Dresden, furnishes four beautiful specimens of Painting on china. They are all copies from the "Magdalen of Batoni," Raphael's "Madonna del Sedia," and other equally well-known pictures in the Royal Gallery of Dresden; but, as specimens of painting on china, the works he exhibits are excellent. The same artist exhibits a small case of miniature paintings on porcelain (brooch size); many of them remarkably well executed, and representing some of the finest paintings in the Dresden Gallery.

Anxious to hurry on to the many interesting articles that are tempting us away from the Austrian and Prussian department—we must satisfy ourselves with the enumeration, in a few lines, of many superior productions, to which we should gladly devote more space. Several photophanic pictures, or pictures made of transparent porcelain, give us an opportunity of estimating the progress this branch of art has attained in Berlin. They are from the Royal manufactory, and do not appear to claim a more than ordinary amount of attention. Madame March, of Berlin, supplies some terra-cotta figures, medallions, &c. Berlin also sends a few neat specimens of wood-carving, in which branch of art De Groot of Dublin leaves his Prussian competitors in the distance. There are also some paintings on copper, varnished, from the establishment of Charles Wried, successor to Stobwasser, of Brunswick. These paintings, of course, must vary in excellence, according to the skill displayed by the artist; but they are chiefly remarkable for the very reasonable terms at which they can be produced. The surface is beautifully varnished and polished, and is as smooth and brilliant as glass. The peculiar manner in which this process is performed, gives these pictures the power of resisting not only the atmospheric changes when placed in the open air, but it is said also the constant action of water, and even of some of the milder acids.

There are two cases in this department which will also attract notice. The first is a case of artificial flowers, from the establishment of A. de Rodenburg, of Vienna, in which skill and taste are displayed not less in the manufacture of the flowers than in their effective arrangements; and the next is a glass case, close to it, containing specimens of borders, flowers, figures, &c., for valentines, fancy note-paper, &c.; and trimmings and edgings for the elegant little boxes, labels, &c., in the manufacture of which foreigners so far surpass us. The manufacture of these fancy articles gives employment in the town of Paris to several thousand people. It is creditable to Ireland to be able to say that most of the fancy-boxes, labels, and wrappers in which Irish linen is wrapped for exportation, are now manufactured in Belfast; and the Exhibition contains undeniable proofs of the progress already made in this novel branch of industry. We need scarcely remind our readers that the finer descriptions of muslins are exported in "books" or fancy boxes, highly ornamented, to please the caprice of purchasers. Hence the phrase, "book-muslin." The case of fanciful devices in paper, which we have alluded to, will show the perfection to which this art is brought on the Continent. Fechner, Guben, Prussia, is the exhibitor.

FRANCE.

The French collection is not yet complete; but, as a number of workmen are busily engaged opening and distributing the contents of several cases, we have no doubt, in two or three days, the display from France will be most creditable to her. The most interesting portion of the French department consists of the *Exposition de la Vieille Montagne*, the eminent zinc-founders. Several large counters, rising in steps, are covered over with articles—some useful, some ornamental, but generally combining both requisites. The zinc castings are either "bronzé, doré, or argenté;" and, by a combination of gilding and bronzing, a beautiful effect is often produced. The specimens vary considerably in size and excellence. There are admirable busts of Napoleon the Great and the present Emperor of France; and several very beautiful clocks, of different designs. Among the other things we may mention table ornaments in variety, groups and figures, both men and animals, candelabras, lamps, candlesticks, lustres, presse-papiers, and, in short, all the fashionable nicknacks upon which ladies delight in laying out their money. The price of these articles, from the great ease there is in multiplying copies, is moderate in comparison to what it was a few years ago, and thus these things, which were formerly rare and costly, are brought within the reach of more numerous classes. Rudolphe, of Paris, also exhibits a splendid collection of jewellery, worth some thousands of pounds; and several other exhibitors will also require a more particular notice.

Workmen are at present busily engaged unpacking a number of cases consigned to the Exhibition from the Royal manufactories of Paris. They contain a fine collection of Sèvres and Beauvais, and other chinas which the French artists allege to equal anything exhibited in London in 1851, and specially selected by the Emperor of France; and also some of the famous Gobelin tapestries, and other articles of rarity and value. Criticism upon the merit of these articles would of course be at present premature and unfair to our foreign friends.

THE BELGIAN DEPARTMENT.

In the Belgian department there are many objects of merit; one of the most interesting being the marble chimney-piece which was manufactured by J. Le Clercq, of Brussels, for the King, and with which the public are familiar, as it obtained one of the prizes at our Exhibition in 1851.

Le Clercq also exhibits five or six other chimney-pieces, but they fail to equal his former production, although by no means unworthy of his studio.

Goyers Brothers, of Belgium, supply one of the finest specimens of wood-carving in the Exhibition. It is a niche, intended for a Roman Catholic place of worship, and contains an image of the Virgin and Child. The wood work, with the exception of the figures, is merely varnished, but they are richly painted in the mediæval style, and the entire reflects much credit upon the artists.

A female bust, veiled, from the studio of Fratkin, of Brussels, supplies

a specimen of a style, which some mistake for true art. A close inspection of any veiled statue will show that the effect is produced not by an imitation of nature, or the genius of the sculptor, but by a mere mechanical, though skilful, use made of lights and shadows. Such productions are as far from true art as the painted statues, which were once admired; and we are pleased to find this bust where it ought to be, among the Belgian manufactures, and not in the Fine Arts Court.

This department also contains a variety of miscellaneous articles, including bird-cages, ornaments, dolls, and toys in endless variety.

THE JAPAN COLLECTION.

The King of Holland has liberally sent a fine collection of Japanese produce; among them a very beautiful cabinet is conspicuous. It is carved, inlaid, and painted in the richest style of Oriental taste. There is also a very good collection of native dresses and armour, and some articles of household furniture. Some stands to hold umbrellas, the staffs or insignias of office, and lanterns made of the dried membrane of some animal, and painted grotesquely, are curious and characteristic. There are also a large and interesting collection of models of native manufacture, including one of a pagoda or temple, and another of a Japanese first-class war-vessel. A complete case of native types, made of wood, takes back our mind to former ages, when printing, with all its attendant blessings, was unknown among us, and when it is probable the art existed among the Japanese in the same state exactly as it exists at present. Whilst with us all the wonderful powers of the steam-engine can scarcely multiply our printed works fast enough, the native printer of Japan, holding the wooden types in his hand, stamps each letter slowly and carefully, by the same tedious process his ancestors used many centuries ago.

Among the other principal articles in this collection is a case of money, for the most part of a square, oblong shape: the smaller coins, particularly the gold ones, are neatly stamped, and much better done than a contemplation of some of their other productions would have led us to expect. The other articles include a pair of scales and weights; screens, fans, trays, painted hangings for walls, specimens of china, tom-toms, monsters, idols; and, in short, a most valuable assortment of the principal articles illustrative of the habits and social life of this singular people.

INDIAN COLLECTION.

The Indian collection will be very beautiful and perfect. A great portion of it is furnished by her Majesty, and the Society of Arts, Adelphi. The collection is under the care of Mr. Dowlin, one of the curators of the East India Museum; but, in consequence of the space required for the ceremonial of the opening, the greater portion of the goods have not yet been distributed. The collection will be very beautiful, and not inferior to the Indian department in our Exhibition, which attracted so much notice. It will be more convenient to postpone giving a Sketch of the Indian contribution till the whole collection may be seen at a single coup d'œil.

VISCOUNT GOUGH'S COLLECTION.

Close to the last department is Lord Gough's collection of Indian and Chinese rarities. Although it is not yet in a completed state, having had the opportunity of inspecting it, we are enabled to give a sketch of it. This is one of the finest contributions from any private individual in the building. It consists of rarities and specimens of skill and ingenuity collected in India and China during the wars in which his Lordship held the important post of Commander-in-Chief. Among these, the most interesting, for many reasons, are several beautiful Sikh guns. These comprise two twelve-pound brass howitzers and carriages complete, forming a portion of the guns taken by Lord Gough in the action of Sobraon, in the year 1846, and subsequently presented to him by the Government of India; and also a six-pound and a twelve-pound howitzer, taken by his Lordship in the battle of Goojerat, and presented to him by the Governor-General of India. All these guns were cast by the Sikhs; and, as specimens of perfect castings, cannot be surpassed. One of the guns has been slightly marked by the bursting of a shell immediately above it; but the others present a surface as smooth and free from defects as it is possible to be. The carriages are beautifully inlaid with brass gilt, in fanciful devices; and all the metal work is either of brass gilt or of polished steel. In this style of finish they far surpass our own guns, and they are, we believe, fair specimens of the guns used against us in the Sutlej campaign.

Another gun in the same collection suggests an invidious comparison between the Sikhs and Chinese enemies his Lordship encountered. It is a Chinese gun, taken in battle. It is about three feet long, and is wrapped round (probably to preserve it from injury) with Chinese matting; it has four handles, two at each side; and was carried in battle by two soldiers; and when fired had to be laid upon the ground and elevated to the proper angle by placing earth or stones under it. We have little hesitation in saying that the majority of Europeans would much prefer being the enemy, against whom this gun was directed, to being the Chinese artilleryman who served and fired it off.

This compartment also contains a fine bronze bell, taken from a joss-house, near Ning-po, the top of it ornamented with a monkey or Chinese monster, and affords a good type of Chinese casting. In addition to several dozen specimens of fine china, of various descriptions, Lord Gough exhibits some very curious models of male and female figures, carved in India, from the pith of a species of bamboo; a model of a Chinese joss-house, with the idol in it; a basket made of horn and the quills of the porcupine; models of guns in jasper, and bloodstone from India; an ivory model of a hackery, or native carriage, drawn by bullocks; and several other fine specimens of Indian carving. The Imperial and other standards of China, taken at Ching-Kiang-foo, add to the value as well as effect of this compartment, in which a number of Chinese, Indian, and Sikh dresses, suits of armour, and implements of warfare, with a variety of other things, are tastefully distributed.

THE CHINESE COLLECTION.

In addition to the varied produce of China, in Lord Gough's and other departments, Messrs. Hewitt and Co., of Fenchurch-street, send a very fine collection. It contains a number of china jars and mandarin vases, and several other articles of china, in which this material is applied in a rather novel manner; for instance, we have a Shih-koo, or stone gun, a portable garden-seat made of china, and probably the best material that could be used in a country where the casting of iron has as yet made (compared to us at any rate) but little progress. Again, we have examples of the China land-marks, used to separate the different fields or tea-gardens, in districts where "every rood supports its man," and where ground is too valuable to be encumbered with fences. These land-marks can easily be inscribed with the names of the owners of the lands they separate, as well as their extent or position.

Messrs. Hewitt and Co. also exhibit a very fine set of carved chessmen, valued at £40. Each piece has a ball in the pedestal, which contains several concentric spheres, all worked in one piece, without joining. They also exhibit a singular Chinese rattle, made of a block of wood hollowed. This is used by the Chinese watchmen as signals; struck with a stick it makes a loud noise; and it is upon this that the watchman strikes the hour during the five watches into which the night is divided—the first commencing at 7 p.m.: gongs and drums are also used for the same purpose.

In addition to these interesting articles, there are several very beauti-

ful cabinets, painted, carved, and inlaid with ivory in an admirable manner; one in particular, from Ning-po, supported by carved dragons, will not fail to attract attention. We can merely hint at a few of the other principal articles: a carved ivory ball, with twenty concentric spheres; lacquered tea-caddies, workboxes, fans, of carved ivory and sandal-wood; boxes of the same; a swan-pan, or reckoning-board; a bird-cage, inlaid in ivory; several painted lanterns, some of glass and others of varnished gauze; fire-screens in endless variety; baskets, made of carved ivory, tortoiseshell, and silver filigree; a very elegant vase of carved ivory; a military saddle, richly embroidered in silk; a handsome table, carved and inlaid in ivory and coloured woods; and, in fact, a variety of other things, which are too numerous for, though not unworthy of, especial notice.

Having taken this hasty glance at the Foreign department, let us now cross the Great Hall, and ascend the gallery of the Northern Hall.

CERAMIC MANUFACTURES.

Although it would be scarcely just to pass an opinion upon the excellence of any particular department, where so much is still undiscovered; yet we have little hesitation in saying that the specimens of china and glass form one of the most interesting portions of the Exhibition.

Messrs. Gregg and Son, who are the Dublin agents for the sale of Mr. Copeland's beautiful productions, exhibit a very fine collection of English and foreign glass and china. We have selected a tall cup and cover, of red enameled flint glass, as a specimen; and a small vase from the same stall. Messrs. Gregg and Son also exhibit several lustres, of different sizes, of plain and coloured glass; and a number of vases, cups, and beakers, of French and Bohemian flint glass, enameled in azure, opal, and other colours. Some of the vases are beautifully finished in the Venetian style, with what is called in the trade, we believe, gold twist. They also have a few specimens of the Nineveh vases, which are well worthy of attention. A few small figures in Dresden china, and ornaments in silver gilt, are comprised in their collection.

Messrs. Mayer also send some good specimens, from their well-known manufactory of the Dale Hall Pottery, Longport, Staffordshire. We have selected out of a large number their "Summer and Winter," well conceived, and executed in Parian marble; and also two vases of the same material, ornamented with bold alto-relievo wreaths of flowers in white and extremely graceful.

The productions of Messrs. Rose and Co., of the Coalbrookdale China Company, Shropshire, are conspicuous. We have sketched a Vase from this collection. Two groups in parian will particularly strike us: the subject of both taken from the "Faerie Queene"—"Sir Calypso rescuing Serena," and "Britomartis releasing Amoret."

The fine collection of parian from the celebrated factory of Alderman Copeland, M.P., will require a notice of more length than we could at present afford it. Ridgway, of Staffordshire; and Bell and Co., of Glasgow, also exhibit in this class.

W. H. Kerr and Co., of the Royal Porcelain Works, Worcester and Dublin, exhibit a great variety of ancient and modern English china. The "Shakespeare dessert service" introduces groups of statuary, modelled by Mr. Kirk, A.R.H.A., an Irish sculptor, illustrative of "Midsummer Night's Dream." This service possesses (certainly in the building where it now stands) some additional merit from the fact that almost all the materials used in its manufacture are the produce of the Sister Isle. Hitherto the art of pottery has made no progress in Ireland; and, although the country abounds in all the materials requisite in the manufacture of the coarser specimens of pottery, yet even the cheapest wares are generally imported. It, however, affords us satisfaction to find that more attention has lately been paid to these matters; and we have now in the building a few of its results, in some specimens of tiles and coarse pottery, dairy utensils, &c., from Florencecourt; and in some fire-bricks, and other similar productions, from the county of Tipperary. It will be more convenient to postpone our remarks of the progress made in Ireland in this manufacture until we give a detailed sketch of the porcelain clays, &c., that exist—some of them in great abundance—in several parts of the island. Among the articles exhibited by Messrs. Kerr and Co., are statuettes in Irish statuary porcelain, of "Uncle Tom and Eva," from a design by Kirk; and busts of William Dargan, and others. This collection also contains several vases, groups of figures and animals, and a variety of other subjects, deriving their principal claim to attention from their having been modeled in the Dublin School of Design. The specimens of Worcestershire china are good, and contain dinner, dessert, breakfast, and tea-services; card-trays, *déjeuner* and ink-trays; and several old paintings on cabinets, cups, and vases, illustrating the progress made in this branch of art. There is also a most useful assortment of the various raw materials used in the manufacture of porcelain.

In some remarks we propose making upon the natural resources of Ireland we shall have occasion again to refer to this matter. There is something in the manufacture of china which appears particularly adapted to the genius of Irishmen, whether we consider it as a plastic or an ornamental art. The natural taste Irishmen possess is evidenced not less by the large number of her natives who have attained eminence as sculptors and painters—such as MacDowell, Farrell, West, Danby, and MacLise—than by the numerous examples we see in the Exhibition.

Having concluded this superficial glance at some of the most interesting departments in the Exhibition, it will be more instructive, as well as convenient, to treat of the principal branches of industry illustrated in the Exhibition in detail. As the capabilities of this country, and the manufacturing enterprise of the people, are so much better known, we shall also, in considering these subjects, do so, as far as possible, with our attention fixed upon Ireland.

RAW MATERIALS.

I.—TURF OR PEAT.

Among the many raw materials that conduce to the happiness of the human family, fuel fills, perhaps, the most important place. Turf is generally considered as particularly characteristic of Ireland, where it occupies the same position in social economy that coal fills with us. But, even independently of the various uses to which it can be applied, the large area it occupies is alone sufficient to claim more than ordinary attention. The entire surface covered by bog is estimated at 2,830,000 acres, which is nearly one-seventh of the whole of Ireland. Of this quantity, 1,576,000 acres are flat bog, spread over the central portions of the great limestone plain; and the remaining 1,254,000 acres are mountain bog, chiefly scattered over the hilly portions of the country near the coast. As compared to other mineral substances (among which turf may be classed), it is of a comparatively modern date. Many ingenious theories have often been put forward with great ability to account for the formation of bogs. It has generally been supposed that extensive woods, with which the valleys and sides of the mountains in Ireland were formerly covered, became flooded, and that the uprooted trees formed a barrier which impeded the exit of the water. Thus, probably, an extensive marsh was formed, particularly adapted for the growth of *sphagnum* and other mosses, the remains of which are still quite discernible. As they perished they were succeeded by others of the same species; and in time, the bottom of the formation, under the chemical influence we term decay, and of the pressure of the superincumbent mass, became turf. This theory is supported by the fact that bogs vary in depth, and that the bottom, particularly of a very deep bog, is hard, like coal; whilst the surface is always light and spongy. All bogs also abound in timber—principally oak, yew,

pine, and birch. The oak is generally as black and hard as ebony, whilst the colour of the yew is but slightly changed, to a rich brown or chocolate colour. Both the oak and yew are found nearer the bottom of the bog than the pine and birch, and mostly in a position to show that the tree had been upright, even after the formation of the bog had made some progress. The bog-oak and yew are extensively used for ornamental purposes, and we shall have occasion to draw attention to many elegant articles of this manufacture.

As the bogs vary in depth, position, and appearance, so, too, the turf differs in its characteristics. Some turf is almost as black and hard as coal; whilst in bogs almost in the same locality the turf is soft, and formed of fibrous substances scarcely half decayed. But the chemical constituents differ still more widely, and often, too, in the same bog. Of this an example is given in the "Industrial Resources of Ireland." A section of the bog of Timahoe, forty feet deep, was tested, and the amount of ash it contained was found to vary. The portions near the surface contained 1½ per cent of ashes; the central portions 3½ per cent; whilst the lowest ten feet contained 19 per cent of ashes. Further experiments show that the turf which is found at a depth of forty feet or more, and consequently subjected to very great pressure, approximates very closely to coal in its composition, as well as density and colour; and, accordingly, we are justified in concluding that turf might be artificially made to undergo this change.

The importance of these considerations will be more evident when we remember that the great obstacle to the more extensive use of turf, as an industrial agent, results from its bulk. The value of all fuel depends almost altogether upon the quantity of heat it is capable of generating; and it is plain that, of two substances capable of supplying the same amount of heat, that which is least bulky and most portable is the best: for thus cost of carriage is saved; furnaces may be made much smaller (from which many advantages flow); and stowage in steamers, &c., will be economised.

The first difficulty which must be surmounted, before turf can become as useful as coal, is to decrease its bulk; but there is another great difficulty to be overcome. Turf, from its porous nature, retains a large quantity of water. Ordinary turf retains a fourth of its weight; and turf, carefully dried under cover, still retains a tenth; and this is a serious disadvantage, not only because it adds to the weight and bulk of the turf by the addition of a useless ingredient, but because the presence of water robs the furnace of an amount of heat (in order to expel it in the form of vapour) which would otherwise have been profitably employed.

These are the principal disadvantages turf labours under in an industrial point of view; but some eminent men have insisted that turf, far from being only useful, as an agent in the production of heat, could be used as a branch of manufacturing industry; and that, if distilled in a particular manner, it would yield products far more valuable than its intrinsic worth as fuel. As many processes connected with these subjects will be found illustrated in the Exhibition, it will be interesting to take a short glance at some of the attempts made at various times to obviate the difficulties we have alluded to.

The most natural method of condensing turf, was the application of great pressure by means of a powerful hydraulic engine. By this means turf was not only compressed into a smaller bulk, but the water it contained was forcibly expelled. Two difficulties, however, were soon found to exist—both arising from the elasticity of the fibres in the turf—an immense power was required, and the fibres gradually expanding, attracted damp from the atmosphere. Mr. Williams, an Irish experimenter, endeavoured to correct this by giving the turf a coating of coal-tar; but it is obvious the expense, &c., of this process, certainly in the wilder districts where turf luxuriates, is such, as to prevent its general use. This compressed turf has been used and found very valuable, for the manufacture of coke or charcoal, being in many respects superior, and denser than wood charcoal. It can be manufactured at a cost of 20s. per ton. Turf charcoal is now extensively made by the peasantry in the west of Ireland; but from the want of skill shown, the amount of turf wasted is very great. Sir R. Kane has analysed some of this charcoal with the following result:—

| | |
|-----------------------------|--------|
| Carbon | 89.50 |
| Hydrogen | 1.70 |
| Oxygen and Nitrogen | 4.20 |
| Ashes | 4.20 |
| | 100.00 |

Mr. Derust, pyrotechnist to Vauxhall, made several experiments upon it with a view to test its inflammability, and has given it as his opinion that it was twenty per cent more combustible than wood charcoal. It is, consequently, peculiarly fitted for the manufacture of gunpowder, in which it is, we believe, extensively used.

To get rid of the difficulties that arose from the elasticity of the fibres, it was proposed to place the turf mould, as raised from the bog, in large tanks, and to have it trodden by cattle, or kept in agitation by machinery, whilst a stream of water flowed through. By this process the light and fibrous portions were easily separated from the denser, and the latter being permitted to fall to the bottom of the tank in a sediment, was easily dried when the water was shut off. The artificial coal made by this process is hard and heavy, and possesses almost all the valuable qualities of coal.

Nor are the fibrous portions of the turf mere waste. They are at present extensively used at the paper-mills, in the manufacture of the coarser sorts of card-board, known as mill-board, and of which the covers of books, &c., are made, and generally in the manufacture of all the coarser articles made of papier maché. Many specimens of these will be found in the Exhibition.

Turf of a superior description has, however, been used in its natural state (without being subjected to any of these processes), for many years in the inland navigation of the Shannon. There the bulk of the turf is of little consequence, as the vessel need not carry more fuel than will be sufficient for a trip of a few hours' duration. The matter, so far back as the year 1843, engaged the attention of the Lords of the Admiralty, and the secretary of the Dublin Steam-Packet Company supplied these facts in his answer to my Lords:—

The *Lansdowne*, a steamer with two engines, 38½-inch cylinders, at three feet six inches stroke, consumed upon an average 120 tons of coal per month, running daily (except Sunday) a distance of forty-six miles, at 18s. per ton, covering expenses £108. The same duty is done with 1419 boxes of turf, of twenty cubic feet (about 250 tons weight), at 7d. per box—£41 7s. 1d.: thus making a difference in the cost of fuel per month of £66 12s. 8d.

In addition to these practical tests, many other experiments have been made with turf and coal mixed in different proportions; but, as our object is rather to direct attention to this great source of wealth, than to give a complete history of its various uses, we shall necessarily pass over to another branch of the subject:—

THE DESTRUCTIVE DISTILLATION OF PEAT.

Turf occupies an intermediate position between wood and coal, the different varieties of turf approaching more or less near to each; and, as both coal and wood have long been used in various processes, it is not surprising that many similar experiments should have been made with turf. The destructive distillation of wood is carried on upon an extensive scale in many localities, both in England and Ireland, and forms an important branch of industry. Its principal products are wood-vinegar, pyroligneous acid, creosote, naphtha, and charcoal. Our readers are still more familiar with the distillation of coal, which

is principally conducted upon a large scale for obtaining gas for illumination, but the manufacture of which has incidentally led to the production of several other substances, including coal naphtha, sal-ammoniac, lamp-black, &c. As both these manufactures have long existed as important branches of industry, it is surprising that more enterprising efforts were not made long since with peat, which occupied the intermediate place between the two. As it would be impossible to review the various processes, we shall rest satisfied with a glance at the experiments made by Mr. Reece, at Newtown Crommelin.

In the year 1849, Mr. Reece having brought his experiments to a satisfactory conclusion, obtained a patent for his invention of the process of distilling peat in an air blast, and thereby obtaining certain products. As the matter was one of considerable interest, and of vast importance to Ireland, his process was made the subject of scientific inquiry at the Museum of Irish Industry, and an elaborate report upon it was published. Mr. Reece proposed, instead of putting the turf into a closed vessel or retort, and distilling it as coal is distilled, by the application of external heat, to make the heat generated by its own combustion the agent in its distillation. The turf being placed in an iron cylinder, and the lower portion ignited, the heat so produced acts as the heat of an external fire would have done upon the peat lying immediately above. Thus, in the upper part of the furnace, there is a simple distillation and a coking of the peat; whilst, in the lower portion, the combustion of the peat charcoal, as it descends, is going on. This process, therefore, does not materially differ from close distillation, a saving of fuel being the chief recommendation. The principal products that result from this distillation consist of sulphate of ammonia, acetate of lime, naphtha, fixed and volatile oil, and a substance called *paraffine* which resembles bees'-wax in its outward appearance. It is more brittle, and has a very singular smell; but it is applicable to nearly the same uses. The visitor should examine several specimens of this curious substance, which are exhibited in various stages—candles, and other things, made of paraffine, are also exhibited.

That all these substances can be easily produced by the distillation of peat, no doubt can be entertained, as the most skilful chemists have come to this conclusion, after a searching inquiry. The only question of real importance is the expense. This has hitherto impeded operations of this kind; for, however curious such experiments may be for the man of science, as a commercial speculation the bogs of Ireland will never be applied to such uses, unless it can be done with profit.

The Exhibition possesses specimens of turf and artificial fuel, and a collection of the principal chemical products of turf, which will not fail to interest the visitor, and perhaps cause him to reflect, as he passes over the extensive wastes of bog in the Sister Isle, upon the possible future that may yet be in store for Ireland; when science will transform these solitary morasses into mines of wealth—diffusing industry and happiness, where not long since famine and misery held undisputed sway!

II.—COAL AND ANTHRACITE.

Coal in Great Britain fills the important position we have accorded to turf in Ireland. It possesses little beauty to attract, and derives all its value from its utility alone. It is to coal that England is principally indebted for her commercial greatness. Without it the mighty steam-engine would be an inert mass of iron—our railroads would not exist—our steamers would not plough the deep. The principal coal mines of England are generally well known, and specimens of their produce are to be found in most geological collections. The general absence of specimens of coal (particularly from foreign countries) was generally noticed in the Crystal Palace in 1851; and the same may be said of the Irish Exhibition. Coal seldom offers much to enlist the attention of the stranger; it is principally of interest in the country in which it is found. In the Dublin Exhibition we fail to find such specimens as those exhibited by Messrs. Bagnall and Jesson, in 1851, whose sectional column of the South Staffordshire thick coal, nearly forty feet high, showed the whole thickness of the seam. But we find several collections of minerals, illustrative of the richness of the Irish soil. The Mining Company of Ireland and the Board of Works are the most important contributors. Several specimens are also exhibited by private parties; and the Monkland Iron and Steel Company (Glasgow), Messrs. Morgan and Sons (of Carmarthenshire), Mr. Dunne (of Newcastle-on-Tyne), &c., exhibit specimens of the Scotch and of our own mines, which will afford Irish contributors the advantages of comparison.

As our readers are much more familiar with the coal-fields of this country, it appears more advisable, in giving an historical sketch of the Irish Exhibition to keep our attention fixed as much as possible upon her resources and capabilities.

There are seven principal coal-fields in Ireland, lying nearly equally to the north and south of the metropolis. They differ materially in their geological circumstances—those to the north of the capital yielding bituminous, or flaming coal; and those to the south, stone coal, or anthracite, which burns without flame. Notwithstanding the abundance of turf, coal was worked in Ireland at a very early period; and pits have been discovered that bear evidence, from the rude stone and wooden tools found in them, of having been worked by a race far anterior to historical records. But, from the ignorance displayed formerly, and from present want of capital or enterprise, or something else, the produce of her mines is far less than they could yield with ease; and Ireland, that possesses sufficient resources to supply her own wants, and to become, moreover, an exporting country, imports a large quantity of coals every year, said to exceed in value a million sterling. The principal coal-mines are seven: one in Leinster, occupying large portions of Kilkenny and the Queen's County, with a small part of Carlow; two in Munster—one of them in Tipperary, bordering on that in Kilkenny—and the other spread over large portions of Clare, Limerick, Cork, and Kerry, being the most extensive coal-field in the empire. All these beds yield anthracite. Of the northern coal-fields three are in Ulster: one at Coal Island, near Dungannon; the second in the northern extremity of Antrim; and the third in Monaghan. These last are small, with narrow seams; and are, consequently, of little value. The Connaught coal-field extends over a space of sixteen miles in its greatest length, and lies in the counties of Leitrim, Roscommon, Sligo, and Cavan. The total area of these coal-fields is estimated at 140,000 acres.

It is impossible to cast the eye over some interesting maps showing the geological formation of Ireland, and exhibited by the Chairman of the Board of Works, without feeling surprise at the mineral treasures that lie neglected, scarcely below the surface of the soil on which the unemployed labourer drags his weary steps.

But it is not only in the quantity of her ores that Ireland is rich, their position is even more fortunate. No river in the empire can compare with the Shannon. Its majestic stream winds through a course of 247 miles, through fields whose fertility cannot be excelled. Here and there it expands into lakes, or more properly into inland seas. Lough Allen, in the centre of the iron-fields, covers an area of 9000 acres, and is still very inferior in size to Lough Derg or Lough Ree. Here every opportunity is offered for inland navigation, and the cheap carriage of goods. This splendid river rises among the coal-fields of Connaught, and cuts through the centre of the Munster coal formation. But still greater advantages exist. It frequently happens that the iron ore, the limestone used in smelting it, and the coal, and if necessary, turf (for the manufacture of charcoal), all exist in close contact, divided in the centre by a river that affords at once cheap transit and water power. This is the case with the



THE FINE ARTS COURT.

Arigna mine. In considering the iron ores we shall have occasion to allude again to this matter.

III.—IRON.

Iron was formerly worked extensively in various parts of Ireland. At that time the country was covered with timber, principally oak, and as

there were few roads and no other market for the timber, it was sold for a trifling sum at the mouths of the iron mines. The abundance of timber, and its cheapness led to the establishment of a number of smelting furnaces, and a great amount of prosperity succeeded. But, unfortunately, with that improvidence that appeared (we hope it no longer

exists) to mar every enterprise connected with Ireland, each one felled and consumed the timber, but none planted. No one reflected that the supply of full-grown oak-trees covering the mountain could ever fail. All of a sudden the manufacturers discovered that the fuel was all gone: a consternation appeared to dull their faculties and to paralyze their



THE CHINESE COURT.



THE WOOLLENS COURT.

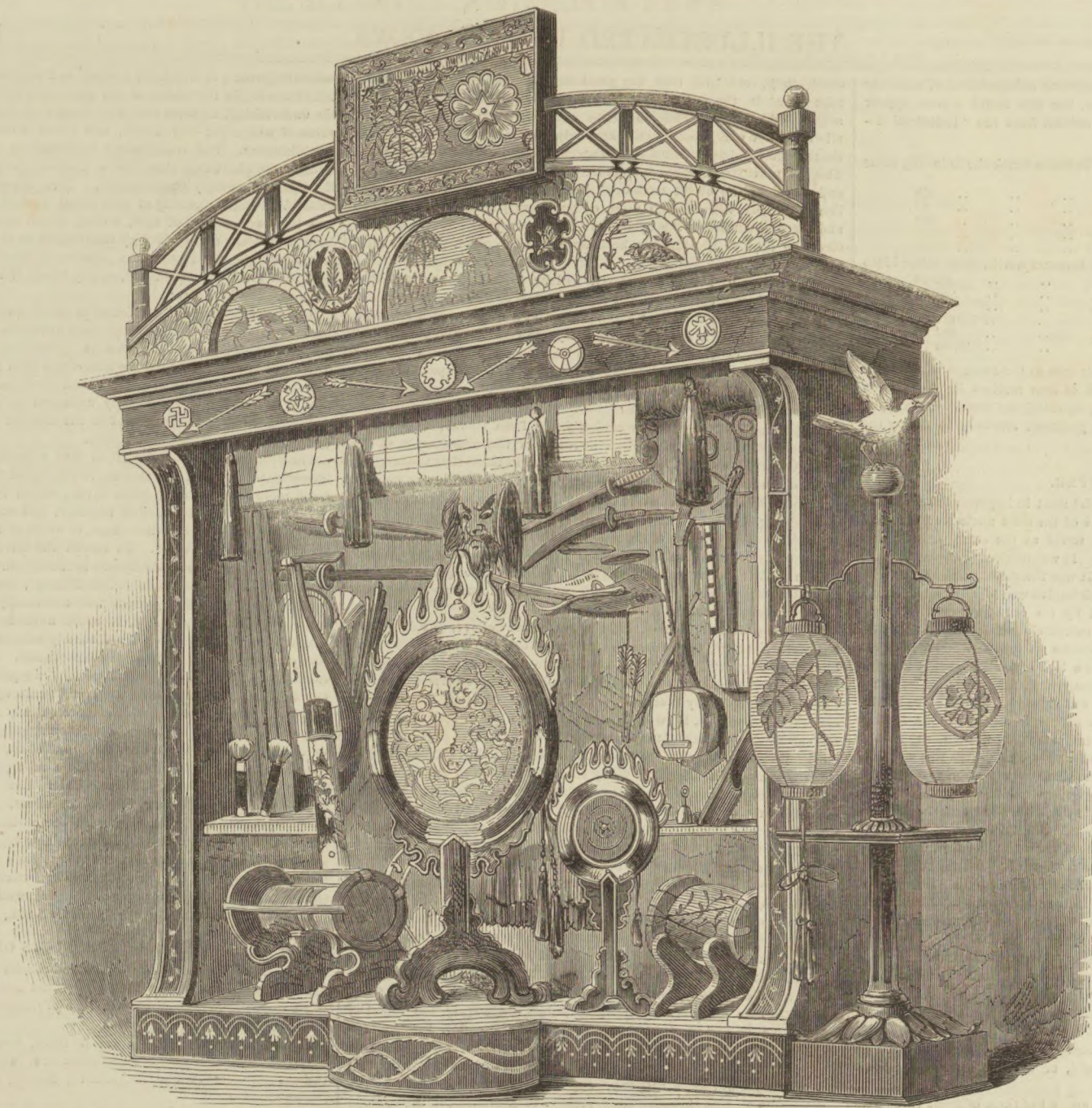
energies. A feeble effort was made to supply the place of timber by coal, turf, or turf-charcoal; but in a short time ruin succeeded the short-lived prosperity. It is now up-

think of our parts or improvements in this part of the world, where knowledge and plenty seem to vie with each other; yet to any one who will seriously reflect upon it, I suppose it will appear past doubt that, were the use of iron lost among us,



JAPANESE SPEAR, UMBRELLA, AND STANDARD.

These mines are situated close to Lough Allen, which is an extensive lake formed by the Shannon; and thus their produce can be transported with economy to any part of the empire. They are surrounded by coal-fields of almost unlimited extent—estimated by the Irish Railway Commissioners; in their report to Parliament presented in 1838, to contain, in the Lough Allen district alone, about 20,000 acres of coal, equal to twenty million tons. The great value of the ore may be estimated from the



CASE OF JAPANESE ARTICLES.

wards of a century since the last charcoal furnace was extinguished in the county of Kerry. Since then the iron mines of Ireland have never filled an important position as a source of national wealth. The Arigna mines, in the county of Leitrim, are the only ones that claim particular attention. Some years ago, Mr. Twigg was deputed by the directors of the Arigna Company to furnish a report upon the mines for their information. In his report he thus speaks:—

The ironstone mines have been examined, and the result found extremely favourable. A greater variety of ironstones I never met with, from which, by a proper admixture and proper management, I have no hesitation in saying that pig iron of best marks, and fit for foundry work of every kind may be obtained. The iron mines begin in Rover, and continue for two miles and a half. I measured several of the beds to more than two feet thick, in some places laid bare in the ravines; and in the bed of the Arigna river we can get any quantity at the shortest notice. There is enough to last two furnaces for 250 years.

subjoined comparative table of the contents in metallic iron of the native ores of different districts, published by Dr. Kane, and the result of careful analysis:—

| | Natural Ore. | Roasted. |
|------------------|--------------|----------|
| Arigna | 40.0 .. | 58.2 |
| Kilkenny | 38.7 .. | 55.3 |
| Staffordshire .. | 28.0 .. | 40.4 |
| Welsh | 31.4 .. | 44.7 |
| Glasgow | 31.6 .. | 45.8 |

Iron, though the most common of all metals, is the most difficult to extract from the ore in a state fit for use. The most trifling inattention to the quality of the fuel, the heat of the furnace, or the various ingredients thrown in (as fluxes, &c.) with the ore, will make the metal comparatively valueless. Many of the processes—particularly those connected with its subsequent refinement—must be directed almost altogether by the practised eye of the workman; for the innumerable changes that take place in the metal at this stage are such as to preclude the possibility of their being directed by general rules. In these matters experience can be the only guide. It is, probably, owing to the isolated state in which the iron manufacturer finds himself in Ireland, that he has so many difficulties to overcome, which would not exist at all in a neighbourhood where practised and experienced workmen were numerous. The increasing facility of intercourse between the two countries will, however, go far to remedy this, and probably lead to the working of a number of neglected mines.

The subsequent processes by which the iron, as it runs from the ore, is refined and changed from cast or pig iron into wrought iron or steel, belong more properly to manufactures.

Few things have exercised a more important influence upon the destinies of the human race than iron. Mr. Locke (in his "Essay on the Human Understanding") points to the whole continent of America as a proof of this; a country possessing everything needful for comfort and luxury, but still plunged in barbarism, from its ignorance of the use of a contemptible-looking grey stone. "And whatever," he adds, "we

we should, in a few ages, be unavoidably reduced to the want and ignorance of the ancient savage Americans, whose natural endowments and provisions came no way short of those of the most flourishing and polite nations; so that he that first made use of that one contemptible mineral, may be truly styled the father of arts and author of plenty."

It will be interesting before we leave this subject to glance at the enormous additions we receive annually to our wealth from the two minerals to which we have last alluded—iron and coal. The quantity of iron produced in England is as follows:—

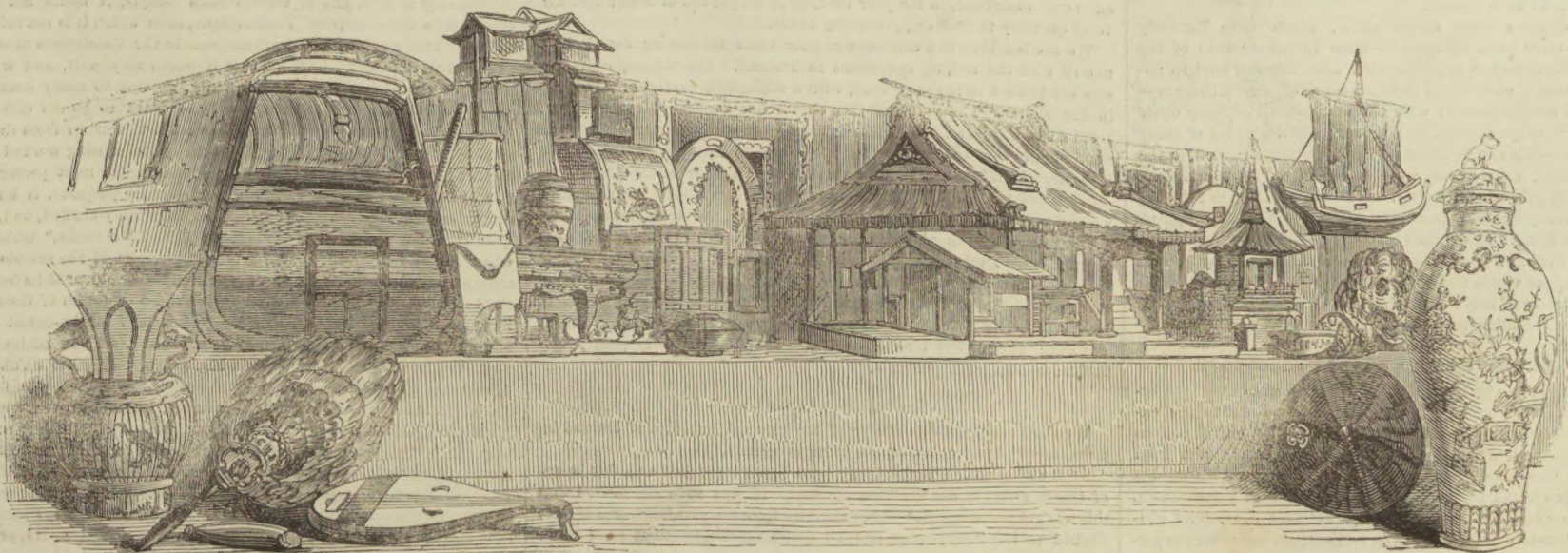
| | |
|------------|-----------------|
| 1844 | 1,210,000 tons. |
| 1845 | 1,612,000 " |
| 1849 | 2,000,000 " |
| 1850 | 2,250,000 " |

The quantity raised this year will, probably, exceed two million and a half tons.

In 1850 the quantity of coal raised amounted to 34,750,000 tons; and the average price of coals at the mouth of the pit in England being estimated at 5s. 7d., and that of pig iron at 48s., it will follow that we acquire an annual addition to our wealth from these two sources alone, amounting to the enormous sum of upwards of fifteen millions sterling a year, viz:—

| | |
|--|-------------|
| 34,750,000 tons coal at 5s. 7d. per ton .. | £9,701,050 |
| 2,250,000 tons pig iron at 48s. .. | 5,400,000 |
| Total value | £15,101,050 |

JAPANESE BANNERS, ETC.



JAPANESE TEMPLE, ETC.

And if we were to add to this the enormous enhancement of value the iron receives by the addition of labour, the sum would almost appear fabulous. The following tables we extract from the "Industrial Resources":—

The quantity of cast-iron worth £1 becomes worth the following sums when converted into

| | |
|--------------------------------|------|
| Ordinary machinery | £4 |
| Larger ornamental work | 45 |
| Buckles—Berlin-work | 660 |
| Neck-chains | 1386 |
| Shirt-buttons | 5896 |

And the quantity of bar-iron worth £1 becomes worth, when formed into

| | |
|-------------------------------------|----------|
| Horse-shoes | £2 10 |
| Table-knives | 36 0 |
| Needles | 71 0 |
| Penknife-blades | 657 0 |
| Polished buckles or buttons | 897 0 |
| Balance-springs of watches | 50,000 0 |

If, then, we were to assume a moderate sum as the average value which five millions and a half pounds' worth of iron receives by the addition of labour, we should have no difficulty in satisfying ourselves, that from this one mineral a sufficient sum is produced annually to defray the whole interest of our national debt.

IV.—COPPER.

We now pass over to the raw material next in importance to those of which we have treated. Copper is one of the most ancient metals, and appears to have been known to the world at the same period it became acquainted with gold and silver. It was originally imported from Cyprus, whence it derived its name. It was the metal generally used by the ancients in the manufacture of their implements of war; though gold, according to Homer, was often used by the ancient chiefs for their armour. Copper, in its pure state, is extremely malleable and ductile; that is to say, its primary atoms possess so great a power of cohesion, that it may be beaten out into a leaf of such thin texture as to be carried off by the wind; or, that though drawn into a fine wire of the small diameter of 0.078 of an inch, it will support a weight of 203.26 lb. avoirdupois without breaking. Pure copper is too soft to be applied to any purpose where great hardness is required, such as in the edge of a sword or hatchet, the head of a spear, &c. This was a serious objection to its use in early days where there was no iron to fulfil such purposes. Ingenuity was therefore applied to the solution of this difficulty, and success was the result. It was discovered that the addition of a very small quantity of tin—a metal still softer—would form the hard and brittle metal we call bronze. To account for this, it is necessary to bear in mind that all metals consist of particles, or primary atoms. Let us look at a glass filled with small shot of a uniform size. No amount of shaking or alteration in the distribution of the contents of the glass will make them fit into a smaller compass, or, in other words, will add to their density. If, however, we pour into the glass something else, consisting of particles smaller than the shot, the interstices will be filled, and the contents of the glass will become denser; and, if cohesion were to take place—such as that produced by melting two metals together—the whole, as a lump of a particular form, would become harder and more solid: there would be fewer empty spaces. This will convey an idea of the manner in which the addition of one metal to another—such as alloy to gold, or tin to copper will add to their hardness and density.

The alloys of copper are numerous, and all of them of great value and utility. Hard bronze, such as the ancients used for their weapons, contains from one to five per cent of tin—the addition of more tin makes the metal harder but more brittle. Bell-metal, which is another species of bronze, consists of nearly a sixth of tin with some zinc, silver, and antimony—the last two in very small proportions; but their addition adds to the sonorosity of the bell. Gun-metal consists of eight or twelve parts of tin to a hundred of copper. This is the metal generally used at Woolwich; and, as it retains some malleability, it is tough and well suited to the construction of field-pieces; but these exact proportions are not always observed. The metal called speculum metal contains about one-third of its weight of tin, and some zinc, silver, and arsenic. It is as bright as steel, and of the same colour, and takes a fine polish; but as it is very brittle, much care is required in casting and polishing it.

Two-thirds of the entire copper supplied to the world is from the Cornish mines. The annual production of copper from Cornwall is 12,000 tons of metal, the value of which is £800,000 sterling. This is generally smelted at Swansea, in consequence of the absence of coals near the mines, and it being found cheaper to take the ore to the coal than the coal to the ore.

The Burra-Burra mines were discovered about the year 1845, in South Australia. Their produce between that and the year 1850 amounted to 56,428 tons of ore, the greater part of which was smelted at Swansea. Later, however, arrangements have been made to smelt it upon the spot, but there can be no doubt the gold diggings have seriously injured the copper mines of Australia.

In Ireland, the principal copper mines from three groups—the first in the county of Wicklow, in the picturesque valley of Ovoca; the second in the county of Waterford, occupying the district of Knockmahon; and the third is situated in the southern portions of Cork and Kerry. The copper ore from the Irish mines is exported to Swansea or to Liverpool. The quantity exported to Swansea averages 10,000 tons annually; and it is probable the quantity exported to Liverpool is nearly as great. In addition to this, a small proportion of copper ore, singularly rich in sulphur, is used in Ireland in chemical works, as well for the purpose of extracting the sulphur as the metal.

Several other districts have copper mines, which were formerly worked, but have since been abandoned—often in consequence of the inability of the proprietors to appreciate the advantages of modern appliances. An authentic anecdote of the Mucross mine, near Killarney—which possesses a communication with the sea, as well as many other advantages—will perhaps account for the unsuccessful working of many of the Irish mines—this one included:—The miners at Mucross, in the course of their labour, came across a profusion of hard stone, of a dark blue colour, tending to a beautiful pink. It was disposed of as rubbish; and upwards of twenty tons of it were given as such to one of the miners, who recognised its value. Some years afterwards it was discovered that this was the ore of cobalt, much used in the arts, and of far greater value than the copper which the ignorant proprietor of the mine was working. The director of this mine might have possessed industry, but he certainly had no practical knowledge.

THE SPECULUM OF LORD ROSSE'S TELESCOPE.

It would be difficult to allude, as we have just done, to the manufacture of speculum metal, without dedicating a few lines to the extraordinary ingenuity and perseverance displayed by an illustrious Irishman in furtherance of science. Few of the scientific men from England or the Continent will leave Ireland without visiting the splendid telescope erected by Lord Rosse at his castle at Parsonstown. Its interest will be enhanced when we remember that everything connected with its construction was made in Ireland, always under the personal superintendence of the noble Earl. It stands prominently forward as the finest specimen of "Irish manufacture" in the world; and though its enormous size, of course, precludes the possibility of its forming part of the contents of the Exhibition building, yet it is so closely connected with its objects that we must, as by a fiction of law, assume it present.

Telescopes are either reflectors or refractors. Lord Rosse, after

much study, concluded that any great improvement in telescopes must take place in the reflecting telescopes. To persons not practically acquainted with the subject, it will be sufficient to say that a reflecting telescope is so called because the heavenly body is not viewed directly by the astronomer, but reflected from a speculum, or brilliant looking-glass. This speculum is of a concave form (or more properly a parabolic curve), and magnifies the object examined. It is, therefore, evident that the heavenly body will be seen more or less clearly according to the size and accurate surface of this speculum; and the ingenuity of philosophers since the days of Newton has been employed in endeavouring to fulfil these objects.

The wonderful accuracy required will be evident to any one who remembers how great a difference a minute flaw or dulness will make in the image reflected in a plane looking-glass at a distance of a few feet. In the speculum of a fine telescope every error is magnified we might say thousands of times; and the spot that would produce a scarcely perceptible blemish in a lady's fair countenance, in the speculum of a telescope, may obscure clusters of constellations, each many times larger than the world we live in.

To produce such a speculum perfectly free from flaws (the result of the casting), and from obscurity (the result of the constituents of the metal), was not easy. The difficulty consisted in this—that the brighter the metal was made, by the various compounds of which it was formed, the more difficult it became to cast it, from the extraordinary brittleness it acquired. It became, therefore, the general aim of all operators to increase the whiteness of the metal, and at the same time to decrease its porosity and brittleness. Such was the brittleness the metal acquired, that the apparently unappreciable heat it acquired from the operation of polishing the surface, was often sufficient to destroy the labour of many weeks.

Before the Rosse speculum, Hershell's was, we believe, the largest in the world, though only 18 inches in diameter; and Lord Rosse conceived the apparently foolhardy ambition to cast and complete, in his remote country residence in Ireland, a speculum more perfect and four times as large as any ever before constructed. Necessarily limited as our sketch must be, it will be impossible to point out the many difficulties that met him at every turn. In an industrial paper like this, we shall merely describe the operation of casting the speculum, as this process will serve to illustrate many similar branches of art, which we shall have to describe before we conclude this paper. Having succeeded in producing a metal of extraordinary whiteness and brilliancy, the next thing was to cast it; but its brittleness had exactly increased in proportion to its brightness. As the edges of the speculum cooled necessarily more rapidly than the centre, the speculum cracked.

Most of our readers have probably made "wax and oil," or lip-salve, and have remarked that, as it cooled in the porcelain pot in which it was melted, the edges became cold first. The edges will always be found more crystallized and harder than the centre. This comparison is not perhaps philosophically accurate, but it is sufficiently correct, and will illustrate, in a familiar manner, the difficulty of fine metal casting where a perfectly homogeneous mass is required.

Lord Rosse endeavoured to remedy this by pouring the metal of which he proposed to make the speculum, into a metal, instead of a sand mould—the metal being a better conductor of heat; but here still greater difficulties arose, for bubbles of air, unable to escape through the metal mould, gave a spongy appearance to the substance of the speculum, which no polishing could rectify. For months, in the solitude of his laboratory, did Lord Rosse experiment; and at last he was fortunate enough to discover a plan which has since conferred great practical advantages upon the metal-founding trade. He had hoops of iron tightly rolled together, the size of the intended speculum. This mould was afterwards ground to the proper surface, and the iron hoops were made much wider, near the centre of the mould (where of course the heat would be greater in consequence of the thickness of the metal), and narrower near the edges, where less heat would exist. Thus he succeeded in forming a mould, which, whilst it would permit the globules of air to escape, would retain the metal; and while, by carrying away the heat in different quantities just in the proportion heat would exist in the melted metal, would cool the entire mass equally. Now that the principle has been ascertained, the application of it is found easy, and has proved of great value in the arts.

Lord Rosse made many other valuable discoveries in the casting and polishing of metals; and while producing the finest astronomical instrument in the world, he has also added not a little to practical science. The reader will excuse this digression.

V.—LEAD.

Lead is diffused through Ireland in far greater quantity than copper. The principal mines are situated in the counties of Wicklow, Down, Armagh, Kerry, Clare, Limerick, and Cork. Small veins have been opened in almost every county in Ireland at different times, but few of them have proved very profitable. At present the principal mines are worked by the Mining Company of Ireland, and with great profit. The specimens of the different ores, and the different stages through which the products of the ore pass before they find their way into the market, are all exhibited by that company. The process of smelting the lead ore is carried on by the company at Ballycorus; and the produce of the Laganure mines in the year 1851, amounted to 674 tons, which produced 460 tons of lead, equal to nearly 69 per cent. The company state the proportions of silver in the lead ore per ton amount, from the Laganure mine, to 8 oz.; Cairne, 12 oz.; Ballyhickery, 15 oz.; Shallee, 25 oz.; Kilbricken, 120 oz.; Strayford, 10 oz. The average of silver extracted amounted, in the year 1851, to 20 oz. per ton of lead; and the total quantity to 3860 oz., producing £1029.

We are indebted to a contemporary for some interesting details connected with the mining operations in Ireland. The mining company was established in the year 1824, with a subscribed capital of £140,000, in 25 shares. The value of these shares has fluctuated considerably, from £1 to £22; and the dividends from nothing to 12 per cent. The company, however, is now in the enjoyment of public confidence. Since its formation it is stated to have expended in labour alone £1,400,000. At present the weekly expenditure in labour is above £900, divided among 2000 persons, who receive from 4s. to 12s. per week, many of the persons engaged being boys and women employed in picking and sorting the ore. During the last year the quantities of ore raised by this company amounted to 3335 tons of copper from the Knockmahon mine; sold for £26,680, at Swansea; 900 tons of ore, producing 600 tons of lead, from the Wicklow mines; 4822 ounces of silver, worth about £12,000; and 29,783 tons of coal and culm from the Tipperary collieries; besides other products.

VI.—GOLD AND SILVER.

We shall conclude this sketch of the mineral products of Ireland by a necessarily brief notice of the precious metals.

At the close of the last century some peasants picked up a few lumps of bright metal in the Wicklow streams. It was soon discovered that this was gold—"nuggets." The peasantry from the counties round at once flocked to the "diggings;" and all agricultural operations gave place to the gold fever. In a short space of time upwards of £10,000 worth of gold was collected by the peasantry, in pieces from the size of minute grains to lumps weighing twenty-two ounces. The rumours of the mineral wealth of the district, and the demoralisation that was the natural result of this gold-hunting, soon induced the Government to take the mining into their own hands. But, whether the result of accident,

mismanagement, or fraud, the project, as a monetary speculation, was a total failure. In the course of the two years the Government managed the undertaking, no more than 945 ounces of gold were collected, the value of which was only £3675, and much under the expenses of the establishment. The Government consequently abandoned the mines, which were afterwards leased to a London company, in whose hands they proved equally unproductive. They are now abandoned. It is probable that the quantity of gold found at first in the Wicklow rivers was the accumulation of ages, during which even mountains may have been worn away and carried by the streams to the sea; whilst the gold, from its weight, remained behind, constantly accumulating. No veins of gold have ever been discovered, or any traces of it, except in the alluvial deposits of the river.

Silver has sometimes been found in small quantities, in a native or pure state. The quantities found have never been of sufficient value to make the working for it a profitable speculation. The silver produced in Ireland is generally found in connection with lead. The ore of some veins is so rich in silver as to be called silver-lead. Formerly the process of extracting it was wholly unknown in Ireland, and the lead, richest in silver, used to be sold in the English market, in consequence of its brittleness, at an inferior price.

The process by which the silver was separated from the lead was formerly tedious and expensive: it was called "cupellation." Lead is much more easily oxidised than silver; or, in less technical language, if the two metals are melted together, and exposed to the oxygen of the air the lead will turn into dross, or oxide of lead, without the silver being in any way affected. To obtain the silver from the lead, both were melted together, and exposed to the air, and in process of time the lead changed into the oxide called litharge, and the silver remained unaltered. But as this process was necessarily very expensive, from loss of lead, labour, and fuel, it could never be profitably used, except in cases where the lead contained twenty ounces of silver to the ton—a matter often difficult to determine beforehand. Mr. Pattinson, of Newcastle-upon-Tyne, by applying a well-known principle to the solution of this difficulty, has conferred a great benefit upon manufacturers. It was well known that lead melted more quickly than silver, and that it also cooled more rapidly, its particles arranging themselves together in crystals. The whole metal was, therefore, melted together, and as soon as the lead began to form in crystals, it was removed in a perforated iron ladle. Thus the lead that remained behind became richer and richer in silver, till at last it became so pure, that the remaining lead could be easily separated from the silver by cupellation. The silver is now separated from the lead by this process at the Irish mines, and a fine mass of silver, now exhibited by the Mining Company, in a single block, worth £200, attests its practical application. By this process silver, amounting to only three ounces in the ton of lead, and worth no more than 15s., may be separated with profit.

OTHER MINERAL PRODUCTS OF IRELAND.

The other mineral products of Ireland consist of nickel and manganese, in small quantities, alums in Clare and Kerry, pipe-clays and china clays, minerals of barytes and of magnesia, ochre, slates, and marbles, and some others.

It will be necessary to consider these, and, indeed, all the raw materials of which we have made mention, when we come to treat of the various manufactures, both native, British, and foreign, that adorn the Exhibition.

In the order we have preserved, we were anxious, as far as possible, to consider the metal as it leaves the miner's hands, without any consideration to the subsequent processes it may have to undergo; and, with respect to Ireland, we were anxious to put before the reader a succinct view of her natural resources almost without commentary.

It is impossible to view all these elements of national aggrandisement and wealth, without feeling that if Ireland had ever had the good fortune of possessing as many Dargans as she has had Smith O'Briens, O'Connells, and Meaghers, smiling plenty would long since have dispossessed her poverty; and that island, so long a difficulty to all governments, and a help to none, would have been our support and our pride.

THE IRISH MARBLE COURT.

At the northern side of the Great Hall is a small compartment of great interest. It contains not only a fine collection of specimens, but several larger manufactured articles, such as chimney-pieces, &c. The principal collection of specimens consists of a series of two hundred and forty-five, representing the natural rocks, minerals, soils, &c., of Dublin, collected by Henry O'Hara, Esq., C.E. A fine collection of Irish marbles, in a glass case, exhibited by the Museum of Irish Industry; some specimens of green porphyry, from Lambay Island, and red conglomerate, from the same place, both the property of Lord Talbot de Malahide; a handsome doorway of Cork marble, two chimney-pieces, some pedestals, busts, panels, and slabs of various sizes, illustrate the marbles of the different counties in Ireland. Were we to mention each contributor particularly, this sketch would degenerate into a mere catalogue of names; for we are gratified to be able to say, that every Irishman appeared ambitious to display for public inspection the varied natural products of his country.

The marbles of Connemara are well represented. They consist of three kinds—the hard white, the black, and the green. The green varies very much in colour: sometimes it is almost white; again, pale yellow; at other times, bright yellow, or dark green, almost black. The most valuable specimens are generally of a bright green, almost as bright in its colour as malachite. We are convinced, if this marble existed only in the ruins of some Italian temple, it would not be less valued than the celebrated Verd-antique, than which it is not inferior in beauty. This marble exists in abundance in the Connemara mountains, near Ballynahinch and Clifden; and it works very well, and will bear turning in the lathe: it is, consequently, applied to many ornamental purposes. The principal objection to it is stated to be the difficulty of procuring large slabs of it free from flaw; but this arises from the small demand, which has hitherto prevented the quarries being worked to that depth at which alone marbles will be found in the most perfect state. The quarrying of marble, certainly, for statuary purposes, is but little understood in Ireland. The marble is invariably blasted, and, consequently, it receives what is technically called "a shake," which, even where it is not discoverable, dulls the appearance of the marble, in the same manner that the slight flaw in the Koh-i-noor obscured its brilliancy until the recent cutting. Two very handsome tables of Connemara marble—the slabs of green, and the pedestals of black—attest the size and perfection in which slabs may be procured. These tables will be found in the compartment we have alluded to. They are exhibited by Mr. Lambert, of Cong Abbey.

Black marbles exist in great abundance, but not in great purity, in Ireland. The most important quarries are those of Kilkenny and Galway. The Kilkenny marble when cut is perfectly black; but after a short time the whole surface, in consequence of the action of the light and atmosphere, becomes studded with the shells and organic remnants of the fossil insects imbedded in its substance. These are varied, and as curious as interesting, and in the eyes of a geologist would, probably, add much to the value of the marble. Specimens of this marble, and of the black marble of Galway, will be seen in the Exhibition. This latter is exported in large quantities to New York and London. Black marbles are also found at Churchtown and Dourale, in the county of Cork; and in several portions of the counties of Limerick, Kerry, Clare, and Tipperary.

The Armagh and Churchtown marbles are also well represented. They present a mottled surface of red, brown, and yellow, sometimes tinted with purple. They take a high polish, and are much admired. A handsome doorway, completely made of these marbles, and two mantel-pieces, will not fail to impress the visitor with admiration for this very beautiful variety of native marble.

The other marbles of Ireland are—the ash grey, with a very fine grain, in the counties of Cork and Limerick; near Shannon Harbour, fine gienna and dove-coloured marble; near Dunkerron, county of Kerry, in small quantities, a purple marble, veined with dark green, and resembling bloodstone.

In addition to these marbles, which generally are mentioned as specimens of great and inexhaustible quarries, Ireland possesses a number of veins of very beautiful marbles, and porphyries, and agates, amethysts, &c., a collection of the latter being exhibited by the Lord Chancellor of Ireland. The famous Irish diamonds, or crystals, also abound in various parts of the country, and they are now extensively used to ornament the bracelets, brooches, &c., manufactured of the bog-oak.

We should strongly recommend the visitor who is really anxious to make himself acquainted with the geological wealth of Ireland, not to leave Dublin without visiting the "Museum of Irish Industry," 51, Stephen's-green East. He will find a fine collection of all the geological productions of Ireland carefully classified, including marbles, building stones, clays, sands, &c. This museum also contains a good collection of Irish birds and fishes; and samples of most of the principal branches of native manufacture. The museum is free to the public.

THE SERPENTINE MARBLES.

In an appropriate place, close to the Irish Marbles, stands a fine collection of articles exhibited by the "London and Penzance Serpentine Company." The articles are all made from the material which forms the Lizard Rock, near Penzance, on the coast of Cornwall—a place well known, by the Lizard Lighthouse, to those who have sailed from the Irish ports to Falmouth or Plymouth. It forms the whole of the southern part of the Lizard Rock. This rock is igneous, and, like others of a similar origin, it varies greatly in its general appearance, colour, and texture. It is always beautifully mottled—sometimes red, with patches of green and brown; and in others, red, green, and yellow are irregularly mixed together. It is frequently traversed with white or yellowish veins, called steatite, which adds much to its beauty. According to an elaborate analysis of several specimens of the rock, carefully made for the company, it was found that, whilst the constituents of the rock varied very much in particular cases, it generally consisted of—

| | |
|-----------------------------------|--------|
| Magnesia | 34.50 |
| Silica | 42.50 |
| Alumina | 1.00 |
| Oxide of Iron | 2.12 |
| Oxide of Manganese | 0.70 |
| Oxide of Chromium | 1.36 |
| Lime | 0.25 |
| Water, Carbonic Acid, &c. | 13.57 |
| | 100.00 |

The articles exhibited consist of columns, pilasters, pedestals, fonts, obelisks, vases, tazzas, jugs, chess and work-tables, monumental tablets, urns, slabs, and a variety of antique and modern designs for the decoration of modern houses, public buildings, or ecclesiastical edifices. The stone is hard, and yet worked with facility—a fact sufficiently evident from the comparatively low price at which these articles are manufactured. It takes a fine lustrous polish, which adds much to the brilliancy of the tints; and, when once polished, it is said to resist the action of the atmosphere, damp, grease, and even acids, for a long time. It is generally applicable for all the purposes to which the rich marbles of Italy are usually applied, and may be carved with facility; and it differs from many marbles in this—that the portions carved with the greatest minuteness preserve their brilliancy, as well as the large surfaces, instead of showing the unfinished appearance which we so often find in inferior materials.

As the manufacture of ornamental articles from serpentine promises to be (we might almost say already is) an interesting feature in the varied branches of home industry that flourish in Ireland, it will be interesting to trace its origin. It affords one of the many examples that might be adduced of the great advantages a particular branch of manufacture has derived from public attention being directed to it by some fortuitous occurrence. In treating of the Irish Exhibition, it is encouraging to notice the rapid rise of this branch of manufacture, for we feel convinced that similar results will bring into notice many of the rich and varied mineral treasures of Ireland that exist in almost boundless profusion, unknown or unheeded, but yet possessing the same, and even greater claims, to public attention. That it may be attended with this success is the anxious prayer of every right-thinking man.

The beauty of the stone which forms the rocks of Penzance has been known for centuries. Unlike other marbles, its singular and varied richness is visible in the rough-hewn block before the polisher has applied his magic art to its surface. The richness of its vivid tints is particularly remarkable when it is placed in such a position that water can play upon it—as for the basin of an ornamental fountain, &c. It was occasionally used for various purposes; but, though equalling in every respect, in its adaptability for ecclesiastical architecture, the beautiful marbles (such as those in the Temple Church, &c.) so often used, yet it was but seldom employed; and then, even, attracted no attention.

It has lately been discovered, by mere accident, that the brackets of two of the monuments in Westminster Abbey, erected in 1710 and 1711, and also the panel-bordering of the monument erected by the Marquis of Halifax to the memory of his friend Addison, the poet, are of serpentine; and their polish remains as perfect now as if but recently placed there. Notwithstanding these opportunities of being seen and admired, the stone for centuries attracted no public notice until the Royal visit to Mount's Bay in 1848, when his Royal Highness Prince Albert expressed his admiration of its utility and beauty, and suggested the propriety of working it upon a more extensive scale. The suggestion was at once adopted, and the increasing demand for it testifies the accuracy of the estimate his Royal Highness formed of its industrial value. Additional skill and enterprise are keeping pace with the increasing demand; and in a short time we shall be surprised if this material does not become as well a favourite at home as a regular article of exportation.

The articles exhibited are remarkable for their large size and their style of finish. Several large vases, tazzas, and jugs, generally after antique models, serve to show at once the beauty of the material and the skill of the artist. Some elegant tables, and a variety of other articles, are exhibited, inlaid with steatite, and display taste and judgment. It is said that the steatites, when used for inlaying, harmonise better than any other material with the serpentine. In their essential compounds these two rocks, though both silicates of magnesia, differ a little—the steatite containing a larger portion of silica, and the serpentine more water of consolidation. The serpentine is also harder and brighter, and the contrast between the various colours of which it is composed more strongly marked. The steatite is of a softer colour, as well as texture, and it often approaches to a dun, or a whitish yellow. In small articles, or used for inlaying, it looks well; but, in larger works, it wants the noble effect, which the serpentine so eminently possesses, suggestive of hardness and solidity.

We cannot conclude this subject without regretting that many of the

beautiful marbles of Ireland are not displayed to similar advantage. The compartment occupied by the Serpentine Company speaks of individual enterprise, and proclaims commercial success. In the Irish marbles the articles exhibited, with few exceptions, are either contributed from the Dublin Society, or the Museum of Irish Industry—both institutions wholly or in part supported by Government grants. We see also here and there a table (and some of them very beautiful) inlaid with native marbles and other articles, showing great ingenuity; but we fail to find extensive manufactories where Irish marbles are produced, not as curiosities, but to meet a fair demand in the home or English market. A visit to the principal marble yards in Dublin will surprise us still more; for here we find the artist (in a country abounding in the beautiful marbles to which we have endeavoured to direct the attention of our manufacturers) engaged in working those imported from England, Scotland, and Italy. The inferior mantel-pieces, &c., are generally of Irish marbles; but those upon which the artist lavishes all his art are for the most part of foreign materials, often very inferior to those that abound close at hand.

We sincerely trust the display of specimens from native quarries will lead to the formation, among a few spirited capitalists, of a company like the Serpentine Company, determined to force a thriving trade in Irish manufactured marble by the only practicable means—excellence in the material, cheapness in the production, and skill and elegance in the execution.

FLAX AND ITS PRODUCTS.

Although our notice of the mineral products of Ireland is far from being a complete one, yet we are anxious, before proceeding further, to notice the great staple manufacture of Ireland.

Ireland is peculiarly suited for the growth of flax. The light and fertile soil, the softness of the climate, and the fresh breezes of the Atlantic that fan the island, tempering the heat of the summer sun, all conduce to the health and perfection of that delicate plant. It will be interesting, before we enter into an account of the manufacture of flax, to notice briefly the progress of the growth of the raw material.

Formerly woollen factories were scattered over a great portion of Ireland, and from the abundance and excellence of wool, the manufacturers were not only enabled to supply the home demand, but were also enabled to compete successfully in the foreign markets with us. The rapid rise of this branch of Irish manufactures produced a great deal of discontent among our manufacturers; and the Parliament, acting upon the narrow prejudices which formerly swayed, too often, their better judgment, passed an act prohibiting the export of Irish woollen manufactures. We shall have occasion presently to allude at more length to this subject. This, of course, was a serious blow to the manufacturers so engaged; and, as the quantity of cloth produced far exceeded the home demand, the price fell below the cost of production, and the greater number of the manufacturers, lately so prosperous, were involved in ruin. The more sturdy peasantry and manufacturers of the north of Ireland, who resemble their Scotch ancestors far more than the natives, with whom they have freely intermarried, at once turned their attention to linen as the most eligible branch of industry open to them. At this time little was known of the cultivation of flax; each peasant planted a small "patch" of it, which he generally manufactured in a most primitive manner, either into thread or linen. But, in process of time, the demand for linen opened a new market for his industry, and with it he availed himself of every new process as it became known. The demand continued to increase; and, at last, he found himself able to supply the home demand, and to compete with the foreigner in his own market, and that, too, in spite of restrictive duties. But the activity of the weaver was greater than that of the farmer; and it became necessary to import large quantities of flax from abroad. In the north of the island such difficulties are not permitted to exist long. A society was at once formed, with the sanction of the Sovereign—the Royal Flax Improvement Society—and its efforts have been unceasing to develop this branch of agricultural industry.

The Royal Flax Improvement Society was organised in 1841 at which period the Irish flax crop averaged about 80,000 acres annually. In two years afterwards (1843), it had increased to 112,000; and in 1844, to 122,000. Owing to the great scarcity of seed, some unprincipled merchants passed off a large quantity of spurious seed upon the growers. This seed was several years old, and, to give it the appearance of being new, had been mixed, over a fire, in pans, with some deleterious ingredients, to give it a fresh, glazed appearance—just as the Chinese glaze their green tea. This, of course, rendered it completely valueless, and the farmers suffered heavily; but the Society, having wisely prosecuted the guilty parties, obtained heavy damages against them. Nevertheless, it produced so much disappointment and loss (and in some cases insolvency), that, in the following year, the breadth sown decreased to 96,000 acres. The crop of 1846 was one of the worst that had ever been known in Ireland or on the Continent. The result of both these causes combined was, that, in 1847, the sowing fell to 48,000 acres; and, in consequence of the general distressed state of the trade and commercial panic, in which the linen trade participated, prices fell so much, that farmers were discouraged, and only 53,000 acres of flax were sown in 1848. As trade recovered from its depression, prices improved, and the breadth of flax sown in 1849 had increased to 60,000. In 1850 it amounted to 70,000, and would have far exceeded that, had seed been procurable—every available bushel having been sown; and the quantity of flax grown last year is estimated at not less than 130,000 acres. Of this, no more than 12,000 acres were grown in the provinces of Leinster, Munster, and Connaught, and the remainder in the northern province of Ulster.

The importance of this branch of national industry will be at once seen. The value of Irish flax has generally ranged from £35 to £80 per ton, according to the quality, season, demand, &c. This has been the general average for the last fifteen years; but sometimes the prices have ranged so high as £120, and even, upon one occasion, £180 per ton. The importations from abroad amounted to:—

| Years. | Tons. |
|--------------|--------|
| 1840 | 62,649 |
| 1841 | 67,368 |
| 1842 | 55,713 |
| 1843 | 90,340 |
| 1850 | 91,097 |

The advantages of producing it at home, are strongly proved by Mr. Blacker—a gentleman whose opinion upon the subject has always been very highly esteemed:—

After the most minute calculations by practical men engaged in the growth of flax, the labour necessary for every acre of flax is computed to be seven days of a man, fifty-four days of a woman, and four-and-a-quarter days of a horse. Now, 55,610 tons weight (which was the quantity imported from abroad at the time), supposing each acre to produce 4 cwt., which is a full average crop, would be the produce of 278,050 acres, which, according to the above estimate, would require in labour an amount equal to the employment of 6488 men for 300 days in the year, 50,015 women for the same number of days, and 3939 horses; or, of course, double the number for half the period.

Another practical writer (Mr. Andrews), whose calculations have been adopted by Mr. Montgomery Martin, and other statisticians, has made some very interesting calculations to arrive at the national importance of flax industry. He calculates that the produce of two acres of flax will give employment as follows before it is manufactured into cambric pocket-handkerchiefs:—

| | |
|--|-----------|
| 158 spinners, twelve months, or fifty-two weeks, at £ s. d. | |
| about 8s. 4d. per week | 1369 6 8 |
| 18 Weavers, twelve months, at £12 | 432 0 0 |
| 40 Needlewomen, fifty-two weeks, at 4s. per week | 416 0 0 |
| 216 persons, amount of | 2217 6 8 |
| Cost of Flax | 75 0 0 |
| | £2292 6 8 |
| Value of produce, 1050 dozen handkerchiefs, at £2 10s. per dozen | 2625 0 0 |
| Profit on produce of two acres | £322 13 4 |

It would be difficult to come to any conclusion as to whether Ireland will soon be able to supply all the raw flax to the manufacturer, or whether she must still be dependent upon the Continent. The fact is, whilst the produce of Ireland has increased very much, the home demand has increased so much more, that, though Ireland has multiplied her produce nearly threefold, the importations from abroad have nearly doubled. We do not know on which to bestow most praise—on the landowner, who trebles his produce; or on the manufacturer, who so far outstrips the farmer, as still to require adventitious supplies, and hold out to the farmer an ever improving market.

Flax may, perhaps, be conveniently divided into four classes:—1. Raw flax—the specimens of which in the Exhibition, are of course, dried. 2. Fibre in various stages of manufacture. 3. Yarn and thread. And 4. Woven fabric.

FLAX FIBRE AND YARN.

The Exhibition contains several very interesting collections illustrative of the entire process of the linen manufacture, from the time the flax is pulled from the ground till it is ready for exportation, in the form of the finest damask. A good series of this kind is exhibited from the well-known house of J. Leadbeater and Co., of Belfast. It contains a complete collection of specimens illustrative of Watt's process for the preparation of flax, including:—

1. Flax straw from the field.
2. Flax straw, with head and capsules taken off, and made ready for steam chambers.
3. Flax seed.
4. Flax seed, capsules, and husks.
5. Flax straw, steamed in chambers.
6. Flax liquor, from chambers, containing important feeding qualities.
7. Flax straw, with epidermis or outer bark removed by wet rolling, and made ready for drying and scutching.
8. Flax fibre, after undergoing the process of scutching.
9. Flax fibre heckled.
10. Yarn (of various qualities) spun at Nile-water Spinning-mill, Belfast.
11. Yarn bleached.
12. Cloth as from loom.
13. Cloth bleached at Messrs. Richardson and Co., Lisburne.

The Royal Flax Improvement Society of Ireland also exhibit a similar, but more extensive collection. This will, of course, attract more attention, and be examined with more confidence, by the stranger (not to say that others deserve less confidence), inasmuch as the society has no private object whatsoever to carry out; but is merely anxious, by affording the most accurate information upon every point connected with flax cultivation and manufacture, to promote its growth in Ireland upon the widest principles of free competition.

The other principal exhibitors in this class are in general the most famous houses engaged in the manufacture of linen, and to whom we shall, consequently, have to refer presently. Roddy, of Belfast, exhibits samples of mill and handspun yarns; bleached drills, &c.; J. Preston and Co., of Belfast, samples of flax in the undressed state. We have also an opportunity of contrasting the Irish flax with the Scotch and our own in the specimens of yarns, &c., exhibited by John Bremner, of Kirkaldy; R. and S. Aytown, ditto; J. Nelson and Co., Selby, Yorkshire; A. and M. Aitkin, Pinchbeck, near Spalding, Lincolnshire; and several other English, Irish, and Scotch exhibitors.

We are particularly struck, as we look over this portion of the Exhibition, with the thoroughly practical nature of the things exhibited. There is not in this department so many examples of what we might call the curiosities of industry as we noticed in the Crystal Palace—where, by-the-by, Ireland was but badly represented in the flax department; but we see the best specimens of the qualities of yarn used in the linens, which form the staple of the country. In the finest specimens of hand-spun yarn—such as those manufactured by Messrs. Berthelot and Bonté, of Cambrai—Ireland cannot compete; but in the more homely specimens that unite cheapness and utility, she equals, if she does not surpass, her foreign competitors.

We shall now glance at the manufactures of Ireland.

MANUFACTURES.

The nearer the Exhibition approaches to a complete form, and the more effectually it displays its rich and varied contents, the more painfully is the following fact impressed upon the mind—that Ireland, as a manufacturing nation, occupies nearly the lowest place in the European scale. With the exception of linen, she has no claim to the character of a manufacturing nation; for her silks, her woollens, and even her lace, fill but a limited space in the great consuming marts of the world, and employ but comparatively a small amount of capital and labour in their production. The Dublin Exhibition, in truth, is virtually a *lucus e non lucendo*, quoad Irish skill and ingenuity; and, had some malicious genius set about entrapping a people into an unconscious exposure of its peculiar deficiencies, it could not possibly have hit upon a more effective expedient than this. The Irishman may here see his inferiority, in point of manufacturing skill, to his several contemporaries; and he must be blind indeed if he still persist in pursuing the same path, and slithering on with the same careless and indolent *insouciance* that has hitherto characterised him. He must now shake himself out of his loose and ill-adjusted habits, and determine to imitate his more energetic and industrious neighbours, if he have the least particle of self-reliance in his composition; and the long whine about Saxon oppression, the intermittent whimper at the competition of English capital, must give place to active and energetic determination. There must, in short, be less noise and more work; and, instead of prostration before Jupiter to get the wheel out of the rut, there must be shoulder-strength to dispense with foreign aid entirely. We write this in all kindly feeling, and will do strict justice to everything Irish in the Exhibition; but we should be wanting in moral truth, and an enemy to Ireland, were we to surround ourselves with an atmosphere of delusion, and consent to view things through the media which, we regret to say, are too ordinarily adopted.

The first thing that strikes the spectator, after entering the building, is the geological map, reduced from the instructive surveys of Dr. Griffith, wherein may be seen the varied and almost boundless mineral wealth of Ireland. There is scarcely an element, which becomes an active agent in industrial pursuits, and forms, as it were the basis of manufacturing skill, that she does not possess. Beneath the surface of the earth, following the minutely-detailed and elaborate diagrams, may be seen, in prolific abundance, the geological phenomena which are in large request amongst industrious communities, and seem to challenge the magic skill of the hand to convert them into more useful purposes. Here marble, to use the geologist's phrase, is seen cropping out in almost every direction, in certain portions of the island; there coal, iron-stone, lead ore, and other valuable minerals, as we have already said



OPENING OF THE DUBLIN GREAT INDUSTRIAL EXHIBITION.



THE DUBLIN GREAT INDUSTRIAL EXHIBITION
THE OPENING BY THE LORD-LIEUTENANT.

are prominently visible. Indeed, with most of the easily convertible and generally required materials, Ireland seems abundantly supplied; she only requires the dormant energies of her own children to be called into activity, and to be steadily and unweariedly directed to their useful conversion.

Turning from the representation of the raw materials to those in a manufactured state, we have but little to greet the eye with an attractive welcome, and that little, for the most part, so ill-arranged, that it can only be seen at a disadvantage. It seems almost incredible—yet nevertheless, it is a positive fact—that the only article in which Ireland, cuts a respectable manufacturing figure is thrust in the background, as though it were necessary to conceal it from public inspection. Instead of linens occupying a prominent position in the Exhibition, they are poked into lateral avenues and into dark recesses, which require a more than common amount of research to find them out. This singular arrangement is more *Hibernico*, in every sense of the term, and must speak for itself. Having eased our minds of these, perhaps, disagreeable but, nevertheless, sincere sentiments, we shall proceed to point out the several excellences of the manufactures in the Exhibition, and of the Irish portion in particular.

THE LINEN MANUFACTURES OF IRELAND.

We have already endeavoured to date the time when the manufacture of flax became an important branch of industry; but it would be much more difficult to discover the origin of the manufacture of linen. We hear of it in the earliest accounts of Ireland extant. The principal garment worn by the ancient chieftains was a shirt made of from 20 to 30 yards of linen cloth, and sumptuary laws were even passed to set limits to the quantity which ostentation would have used. We find linen also frequently mentioned among the produce of Ireland; and Hakluyt, an ancient rhyme-writer, in the year 1430, states, that "Ireland's commodities be hides and fish, as salmon, herring or hake, wool, linen, cloth, and the skins of wild beasts." The cloth was probably the ancient Irish flizee—of which presently.

The linen manufacture, until a few years since, was altogether confined to the cottages of the peasantry, where the peasant, in the intervals of agricultural labour, wove by the handloom the yarn spun by the hands of the female and younger members of his family. No great factories existed at that time, nor in fact, until the discovery of spinning the thread by the wet spinning process, could factories have been established on their present extensive scale. About the year 1825, the system known as "wet spinning" was discovered in Manchester; the process consisted in passing the fibre through hot water whilst it was being twisted. Improvements were gradually made, and the English and Scotch factories soon began to undersell the handspun yarns in the Irish markets. It became necessary, to enable the Irish to compete successfully, to introduce this mode of manufacture; and about the year 1828, the first great spinning factory upon this system was erected at Belfast. Others followed the same example, and in 1841 there were no less than 41 mills, containing 280,000 spindles, at work in the North. In 1850, the number had increased to 73 mills, with 339,000 spindles; and in 1852, there were not less than 81 mills, having about 500,000 spindles, and representing a capital estimated at between three and four millions sterling, whilst upwards of £1,200,000 is annually paid in wages.

The following extract from the report of one of the Inspectors of Factories in Ireland, gives so interesting an account of the progress of this branch of industry, that we feel we should be culpable in withholding any of its valuable contents from our readers:—

Under the original distribution of the Factory Inspectorships, in 1833, the factories in the south of Ireland were attached to my district; of these the principal were those situated in the vicinity of Dublin, and the large cotton factory of Messrs. Malcolmson, situated at Portlaw, near Carrick-on-Suir, in the county Waterford. In the beginning of 1837, these factories, which had heretofore been in my Inspectorship were transferred to the district of my colleague, the late Mr. Stuart; they have now, by your directions, been again incorporated with mine. On comparing the state of the factories in the southern part of Ireland, in the present year, with their state in November, 1836, when I last visited that part of the United Kingdom, although no increase in the number of factories, nor any augmentation of manufacturing premises be observable, I nevertheless saw a very marked improvement in the general appearance of the people. But the face of the country itself was also greatly changed for the better: cereal crops were frequent, and even green crops were not rare, in places where, fourteen years ago, they were unknown, and where in 1836, the eye was wearied by perpetual and monotonous recurrence of potato ground alternately with bog. The unmistakable signs of agricultural improvement, with the abolition of the mischievous con-acre system, make it to be less a subject for regret that manufactures in the south have not advanced, or even that they should have declined in a country essentially agricultural; while the excellent training in the arts of husbandry, and in practical agriculture, upon scientific principles, which is obtained through the agency of the National Board of Education, at their model farm of Glasnevin, near Dublin, and in the various model and other agricultural schools in connection with the National Board, which are dispersed through the provinces, justifies the not unreasonable hope that the improved system of husbandry, which is displacing the potato, and the consequent increase of the comforts and elevation of the character of the peasantry, will more than compensate for the decay of the factory system in the southern parts of Ireland. In no part of my very extensive district is the industrial prosperity, to which I have already adverted, as generally pervading all branches of manufacture, so conspicuous as in the flax-spinning district of the north of Ireland, which having by your directions been only recently added to my district, I have visited for the first time during the half-year just terminated. Of this district, Belfast is the commercial metropolis; and, at every place which I visited, and almost at every factory which I inspected in this part of the country, some extensive improvements were going on some new machinery was being introduced, some enlargement of the existing accommodation was being made, or some new buildings were either in course of construction or about to be commenced. This remark is universally applicable in the northern parts of Ireland, where the energy, enterprise, industry, and skill of the gentlemen who have embarked their capital in manufactures, are to be surpassed by no part of the United Kingdom with which I am acquainted. So rapid is the extension of business in the flax-spinning district, that I have good reason to believe that materials, collected for the purpose of showing the present condition of the flax-mills of Ireland, speedily become obsolete, in consequence of the increase of the works in operation. It is calculated by those who have access to the most authentic information, that the number of spindles in operation for spinning flax in Ireland, in July, 1850, was upwards of 408,000, and that additions to existing machinery in old mills, the establishment of new ones, and mills previously unoccupied newly fitted up, will add to this about 73,000 spindles, making a total of upwards of 481,000 for next year; and, from the present prospects of the trade, it is anticipated that the number of spindles in operation on the 1st January, 1852, will amount to 500,000. Taking the number of persons employed in the factories, together with those employed in weaving, in bleaching operations, and in foundries, in machine shops, and other occupations incidental to the flax manufacture, probably not less 200,000 are actually employed in connection with the trade. There are actually employed in the spinning-mills about seven persons for each hundred spindles in operation; and if the manufacture of linen increase in proportion to the increase in the production of linen yarn, it will add a fourth or a fifth to the numbers already dependent on the trade. For these calculations, I am indebted to Mr. J. Herdman, Belfast, and Mr. MacAdam, Secretary to the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland. But the great increase in the flax manufacture in the north of Ireland not only more than counterbalances the unquestionable decay of the factory system in the south, but it furnishes further compensation by its demand for the in-

creased cultivation of the raw material, and thus supplies a stimulus to the agriculture of those parts of Ireland which are more legitimately devoted to agricultural than to manufacturing operations, and upon which it appears to be already exercising a very beneficial influence, as is shown by some extracts from the tenth annual report of the Committee of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland, which was presented at the general meeting of the society, holden at the society's rooms, Commercial-buildings, Belfast, on the 29th ult. It is satisfactory to observe that the general meeting of the society to which the report whence these extracts are taken, was addressed, was numerously attended, not only by agriculturists of considerable influence, but also by mill-owners and manufacturers, without distinction of party, and who appear to have taken up the subject as men of business, actuated by a common sense of their mutual interest in the prosperity of the staple manufacture of that part of the United Kingdom; and a simultaneous movement seems at the present time to be making by agriculturists in the different provinces for extending the cultivation of the raw material in all parts of the country.

Linen forms the most characteristic portion of the Exhibition, not only from the quality and quantity of the goods displayed, but because it affords an example of the capabilities of Irishmen, when they bring enterprise and perseverance to the task, to introduce into Ireland a great branch of industry, second to few in the empire in importance, and perhaps destined to rival our own cotton fabrics. The manufacture of linen is almost altogether confined to the north. There are a few factories in Drogheda in which about a thousand hands are employed; but the principal trade is carried on in Belfast, Lurgan, Donaghadee, &c. In Mr. Mulholland's factory, which we had the pleasure of inspecting a short time ago, there were between 800 and 1000 people at work; their cleanliness and moral superiority contrasting favourably with the lounging and listless peasantry of the south and west, we had visited a short time before. In the north, education, respect for the laws, and sturdy honesty are the rule. These facts will appear more clearly by a reference to the census. By the return of 1841 it appeared that the proportion of the population in each province who could neither read nor write were in each hundred:—Connaught, 64; Munster, 52; Leinster, 38; and Ulster, 33. Thus, of persons wholly ignorant, there were then in Ulster fewer by one-third than in Munster, and by one-half than in Connaught. These facts are corroborated by the late return of the Commissioners of National Education. The number of national schools in Ulster are there stated to exceed by 250 the aggregate number in the two provinces of Connaught and Munster. Again, if we look to the moral and religious education of the people, we shall see the great advantages Ulster enjoys. Let us take a single example. The following table will show the encouragement given to the Sunday-school system in the different provinces of Ireland, for the year ending the 1st January, 1851:—

| Provinces. | Population in 1851. | Number of Schools. | Number of Scholars. | No. of Gratuitous Teachers. |
|-----------------|---------------------|--------------------|---------------------|-----------------------------|
| Ulster | 2,004,280 | 1931 | 164,635 | 14,151 |
| Leinster | 1,667,771 | 457 | 32,314 | 3,006 |
| Munster | 1,831,817 | 400 | 17,160 | 1,774 |
| Connaught | 1,011,917 | 216 | 12,403 | 822 |
| Total | 6,515,794 | 3004 | 226,515 | 19,753 |

We must refer those who are anxious further to pursue this parallel between the north of Ireland and the provinces of the south and west, to an article entitled "Ireland: its Garden and its Grave," which appeared in September last, in the *Dublin University Magazine*, and in which the agitation and turbulence that so long prevailed in the south and west, banishing enterprise and capital, and disturbing men's minds from honest industry, are forcibly contrasted with the state of the North; where the people are educated, loyal, and industrious; where comfort and contentment reign in every homestead; in short, a province which the commerce and manufactures of the island appear to have selected as their favoured dwelling-place. Let every honest man in Ireland, from the peer to the peasant, again and again inculcate in the minds of his countrymen, on every occasion the truism, that peace, education, and industry, are necessary before a country can prosper; and that a union of these must lead to prosperity.

A large portion of the Southern Hall is dedicated to the exhibition of linen. Almost all the most eminent houses in the north have contributed some of their choicest specimens. These consist of damask table-cloths of a beauty and finish which have made them objects eagerly sought for by more than one Sovereign; of cambrics, single and double damask napkins, sheeting, quilts, muslins, and a variety of other articles. The well-known house of Andrews, of the Royal Manufactory, Ardoyne, Belfast, exhibit several "super extra double damask" table-cloths: the border of one composed of a rich selection of flowers, drawn from nature; the centre a group of flowers, also from nature, which springs from a scroll resting on a shell, and supported by bulrushes, &c. The ground of the table-cloth consists of sprigs of shamrock and flax. Another table-cloth, from the same house, represents in the corners rhododendrons in flower, well executed; while groups of hyacinths, crown imperials, holyhocks, stocks, &c., complete the pattern; the centre consists of a basket of rich flowers, placed on a rustic truck, which rests on a group of flowers at the base, and is supported by an arm, &c.; surrounded by light wreaths of flowers, chiefly climbers. The "fern rustic pattern," from the same house, has a border composed of branches of trees, interlaced with flowers and various climbers, and shamrock margin; the centre is a varied collection of ferns, supported by pieces of trumpet flower and leopards' bane, with festoons of running flowers between, and a filling of a variety of fern sprigs, all drawn from nature. Among the other exhibitors we may mention Cliborne, Hill, and Co., bird-eye diapers, manufactured from prime linen yarn. J. Rowland, Drogheda, damask and diaper sheeting, of all breadths, huckaback, dowlas, tickens, stair-cloth, &c. Fenton and Co., of the Linen Hall, Belfast, exhibit in the Main Hall a "linen trophy," consisting of various kinds of linens tastefully arranged. Bell and Co., of Lurgan, exhibit cambric handkerchiefs, bordered, printed, hem-stitched, tucked, and embroidered in the loom. This house also exhibits some printed dresses, also embroidered in the loom. Murland, of Castlewellan, exhibits a collection of linens, as prepared and finished for the United States' market. Harrison Brothers, of Dromore, Down, exhibit linen shirt fronting in various patterns, all woven in the loom.

LINENS.

The Messrs. J. and R. Geoghegan have contributed a case of manufactured linens, which represents the highest class of weaving, and the best quality of that fabric. The qualities range from 1s. 4d. to 7s. 6d. per yard, of seven-eighths and four-fourths widths. These linens are woven of a fair round yarn, which imparts to them a long-wearing quality, and enables them to bear a good wringing—the most trying test to linen. In work of this kind there is no mixture of cotton, which not only wears yellow, when woven thread and thread with linen, but is liable to be cut by the latter in the process of washing. The sheetings in this contribution are equally truthful in the material of which they are composed; and are not made for sight and sale, but for use, beauty, and endurance. The table-linens, the diapers, the single and double damasks, present the same appearance, and are the production of one of the best linen manufacturers in Ireland.

Messrs. Birney and Collis exhibit a variety of linen, from toweling and sheeting up to the finest shirtings and cambrics. This linen is principally made at Drogheda, and appears excellent in quality; but, as the character of the article is so completely dependent upon the exper-

ience of individual wear and tear, we must refrain from giving an opinion upon it. This firm also exhibits linen fronts, woven in the loom, and intended for insertion into shirts: these fronts are manufactured at Dromore, county of Down, and employ a great number of hands in their production. The cambrics, muslins, and jaconets, appear to be of good quality; and, whatever may be the material of which they are composed, have all the characteristics of first class goods. The printed jaconet muslins in this case are deserving of remark, as they are made in Glasgow and printed in Ireland—of very rare occurrence.

The richest contribution, however, in this class of work appears under the name of James Coulson, who, we believe, is the oldest damask manufacturer in Ireland. The specimens of table-covers made for her Majesty display as beautiful an execution in weaving art as it is possible to conceive. The character of the pattern is exquisitely worked out, and appears as though it was a kind of painted relief—the brown and white threads forming a pleasing, and even a picturesque appearance upon the cloth.

Mr. Andrews, of Belfast, has also an excellent specimen of damask weaving, which is a study in itself: the dark threads of this fabric, however, do not contrast so pleasingly with the light as those of the brown just noticed, the contrast being too abrupt. The pattern, nevertheless, is equally well worked out.

Messrs. Robert Speedie and Sons, of Kirkcaldy, have placed a good assortment of their peculiar manufacture of linen in the Exhibition, which consists of Scotch ticks and coarse cloths, both entering largely into ordinary consumption.

Messrs. Cradwell and Chadwick have contributed specimens of flax in the several stages of its manufacture, from the first gathering to its preparation for the loom, which is deservedly admired. Alexander Knox exhibits a case of linen of the useful kind, apparently; and Messrs. Clibbon and Hill, of Banbridge, have placed a case of diaper in the Exhibition which is equal to anything of the same class of goods around it. The same remark may be made of Mr. R. Roddy, of Belfast, whose diapers, lawns, and table-cloths, are creditable specimens of Irish manufacture. James Mair exhibits some Scotch book-muslins, which are favourable specimens of that kind of manufacture, being even, uniform in thread, and of a fair texture. Mr. Ferguson, of Drogheda, is also entitled to a notice, for the case of well-arranged and most slightly linens that he has placed in this department; so, also, are Messrs. Rainey, Knox, and Co., whose display fully sustains the general excellence of the linen manufacture in Scotland and Ireland.

Messrs. Finlayson and Brownfield, of Glasgow, have a case of coloured threads which is entitled to a distinct notice, as it shows the great attention that has been paid to the manufacture of that useful article in Scotland, and that she has little to apprehend at present on the score of competition.

Mr. Hugh McDonald has placed specimens of tow, hemp, and almost every thickness of string and rope, in the linen department, as a specimen of industrial skill; and a similar contribution by Mr. J. Elliott is equally effective, and, apparently, equally entitled to approbation. It is not stated, but most of these ropes and strings, we apprehend, are twisted by machinery, and not by hand, the smoothness of the line which they display seldom being attained by the latter. The relative strength of the two processes must be tested by experience; that by machinery, if properly served with the raw material, being evidently the most easy and economical in production. Messrs. Brook and Brothers exhibit a case of cotton thread which indicates a certain excellence in manufacture; but that of Messrs. Clark, of Leicester, is the most attractive; whether the article be better in quality must, however, be determined by the consumer.

A description of linen seldom conveys to the reader an adequate impression of the excellence of the articles described; we must therefore close this imperfect sketch, by stating that almost every manufacturer in Ireland is an exhibitor; and that, though the goods exhibited possess, of course, various degrees of excellence, yet, as an entirety, they reflect very much credit upon those whose industry they represent.

Among the Scotch and English houses, we also find some exhibitors who need not fear comparison with their Irish neighbours. Lockhart and Sons, Kirkcaldy; Nelson and Co., Selby, Yorkshire; and a number of others, produce linens, damasks, cambrics, as well as coarser articles—such as sacking, window-blinds, &c.—as samples of the industry in the districts they represent.

SEWED MUSLIN.

Sewed muslin, or muslin embroidered with the needle, is an interesting branch of Irish manufacture; the extent of which is not sufficiently known, nor its value, as a branch of domestic industry, enough appreciated. By some it has been represented as an offshoot of the mere needlework trade, which is proverbially the worst remunerated and the most liable to fluctuation in the empire; others maintain that it stands upon an unsound basis, inasmuch as it depends too much upon luxury and the caprice of fashion; and others, again, have considered it as a branch of peasant employment, calculated to confer great benefits, and, in fact, to work a social revolution in Ireland. As it is impossible to reconcile these conflicting theories; and, as the solution of the problem is one of vast social importance, particularly to Ireland, we shall endeavour to examine this branch of trade in a dispassionate manner. It is, however, necessary to premise, before entering upon the subject, that this is a question that cannot be decided by a glance at the glass cases that display so ostentatiously their elaborate contents in the Main Hall of the Exhibition. Before coming to a definite conclusion upon the subject, it is necessary to visit (as we have lately done with this object in view) the cabins of the peasantry in the south and west, where these manufactures do not exist, and those in the north where they do. And it is necessary, too, to glance at the rising prosperity of the large districts of Connamara, into which the missionaries and benevolent landlords have introduced this means of employment hand in hand with the Reformed religion.

It is not always sufficient to deal with a commercial matter in the cold spirit of a political economist. Social questions of importance must also be taken into account. We must, in estimating the value of any branch of industry, however humble, have regard to the feelings, the genius, and wants of the people among whom it is established. How many benevolent societies do we find in London, and all our manufacturing towns, with the professed object in view of improving the condition of the people, and admittedly at variance with true commercial principles? Even, then, if the manufacture of sewed muslin required any artificial stimulus to support it, will it not be admitted that it fulfils the important object of giving an industrial education to the most interesting portion of Ireland's population—her young women? We shall presently show that the trade is flourishing—depending not on the caprice of fashion, nor on the luxury of the great, but that the demand for this manufacture is rapidly extending among the middle classes, not of this country only, but of America also.

To procure suitable employment for young females is one of the social problems most difficult of solution. If women are married, with children to attend to, and all the cares of a household, their absence from home is, of course, impossible; and if of a tender age, the dangers are great to which young girls are exposed if obliged to work in factories, removed from the surveillance of their parents. In securing a suitable employment for women, it is important to fix upon one which will not necessitate absence from home, and one which will also, as far as possible, inculcate thrift and cleanliness. If, in addition to these, we are fortunate enough to discover a branch of industry which will instruct young women in many necessary things, and which, even if abandoned, by change of place or circumstances, will still be practised with advantage, we shall have gone far indeed towards solving the difficulty. We are satisfied that the manufacture of sewed muslin possesses the advantages we have mentioned; and that its extension will prove a blessing to Ireland.

The art of embroidery is coeval with that of sewing. It has existed in all parts of the world, particularly in the East, from our earliest records. Spinning or embroidery were the favourite pastimes of the females of the higher classes in our country; but, as a branch of industrial employment, it is of comparatively modern date. In France it has existed as an article of trade from an early period. It now extends over twenty departments, though its principal headquarters are at Paris and Lyons; and it gives employment to upwards of 120,000 people, at wages that average from 8d. to 1s. daily. Although this manufacture has existed among us for eighty or ninety years, it is only since the commencement of this century

that it assumed much importance. The introduction of machinery, by which these who formerly obtained profitable wages in spinning yarn by the hand were thrown out of employment, both in Scotland and the north of Ireland, compelled them to turn to something else. At this time there were eight or ten houses in Glasgow, and a few in Belfast, engaged in the trade; and those who had lost their former employment were glad to turn to the new branch of manufacture. Prejudices, of course, existed; but in a short time they vanished, as prejudices always will when met without fear. The low price at which these fabrics were sold soon forced a market, and the public were not slow to discover the elegance of the embroidered muslins, which were now extensively manufactured. To supply the increased demand, it became necessary to instruct new hands; and after a time the new manufacture extended over the whole north of Ireland, whence it is rapidly extending to the south and west.

Although the sewed muslin trade is carefully fostered in the south and west of the island, yet we must not conclude that for that reason it is not capable of flourishing without artificial aid. In the north it receives none: it is self-supporting in the widest sense of the word. The principal warehouses belong to Scotch manufacturers; and the works are executed generally for Scotch houses. For one article made to gratify the luxury of the great, a hundred are made for the use of the million; and, in addition to this, a demand from America is daily increasing, and the trade bears all the symptoms of one with which machinery can never interfere, nor the caprice of fashionable society; but one founded on the requirements of the people, and likely to increase with the comfort and growing prosperity of the middle classes. Let us now examine some of the articles displayed in the Exhibition.

D. and J. Macdonald exhibit an exquisite specimen of needlework-embroidery, in the shape of an infant's toilet, wherein is displayed the different kinds of work in vogue in this department of industry. Here we have the open-work, the satin-work, and the lace-work, combined; the rose, the thistle, and the shamrock are tastefully blended in one piece; and present a pleasing, ingenious, and beautifully-executed specimen of industry. Sleeves, trimmings, habit-shirts, babies' robes and frocks, make up the contents of the contribution; and each evinces its peculiar modicum of excellence, and is well worthy of an inspection.

Mr. Hugh Brown, of Glasgow, exhibits an intermediate quality of goods of this kind, all of which appear to have a marketable property about them, and are truthfully and cleanly finished.

The Normal School of Dublin exhibits specimens of Valenciennes lace in the process of manufacture, on the pillow, with bobbins, thread, and pins, which attracts considerable attention. The quality is stated to be fully equal to the foreign lace, and to be a little lower in price. Be that as it may, it certainly deserves a passing study, as indicative of a growing, and, we trust, a thriving industry in Ireland. The difficulty in work of this kind consists in making the lace from the design; and there does not appear more than three or four hands, even in Ypres (the very seat of the manufacture), who are capable of doing this. When the parchment is once pricked from the design, it is easily multiplied, and worked with ordinary mechanical exertion.

J. Brown, of Glasgow, contributes a variety of sewed work, generally of the finest quality. Here we have children's frocks and robes, habit-shirts and collars: each of these articles displays a different kind of work, varying from the satin-stitch to the neatest embroidery, which presents a singular variety to the contribution. The Mosquetaire collar is a peculiarly skillful piece of work; nor are the embroidered flounces and handkerchiefs less attractive, though not equal to some others in the Exhibition.

A robe of Donaghadee needle-work, in the case of Messrs. Birney and Collis, is, perhaps, next to the productions of J. Forrest, the most beautiful article in the Exhibition of its kind: it is a picture of industrial skill.

Mrs. J. Bleakley, St. Mary's, Bandon, has contributed some neat specimens of muslin, embroidery, and crochet, worked in Ballymodan school, which clearly show that this kind of work admits of a most pleasing diversity.

Messrs. Brown, of Bangor, county Down, have contributed a case of sewed muslin collars, habit-shirts, chemisettes, handkerchiefs, and robes, which would seem to evince that the demand for these elegant articles was becoming more wide spread every year.

Messrs. Bower and Thomas, of Glasgow, exhibit a series of robes, embroidered by the Irish peasantry: besides frocks, collars, and habits, finished by the same hands. The black and coloured veils of the contributors are equally interesting, the more so as the embroidery is the production of Irish labour.

Mr. E. Clarke, of Deepham, Norfolk, has sent some specimens of crochet and point-work collars, in imitation of Honiton and old Marguerite guipure lace, which will suggest to the workers in Ireland that they have something to learn, excellent as they unquestionably are at this kind of industry.

The embroidered pocket-handkerchiefs of Mr. E. Hill, of Bryansford, county Down, are worthy of inspection; so, also, are his contributions of habit-shirts, collars, and sleeves. The work displays great effect, at, apparently, very little labour—the very perfection of industrial skill.

IRISH POPLINS AND TABINETS.

The manufacture of tabinets is almost the only one of which the Irish metropolis can now boast. There are, of course, several other branches of manufacture, but they appear to exist almost by sufferance. But that of which we are now treating has taken a healthy root.

It would be difficult to assign any date for the origin of mixed fabrics. They have probably existed since the art of weaving was first invented. Linen is the earliest textile fabric of which we read. It formed, according to the Sacred Writings, one of the exports from Egypt to Tyre and Siden, in the days of Solomon; and Herodotus also mentions "fine linen" as exported from Egypt in his time to Greece. This statement is fully corroborated by the cloth in which we find the Egyptian mummies shrouded, sometimes equaling in the fineness of its texture the cambric we manufacture. In the days of Roman luxury, the fine linen gave place to the more costly silk. The species of silk-worm that feeds on the pine, the oak, and the ash were common to the woods of Asia and Europe; but, as their management was more expensive, and their produce more uncertain, they were generally neglected, except in the little island of Ceos, near the coast of Attica. A thin gauze was procured from their webs, which was much admired, for female attire, both in the East and in Rome. Virgil is the most ancient writer who alludes directly to the silk we now use. He speaks of it as (what it was then supposed to be) a soft wool, which was combed from the trees of the Seres, or Chinese ("Georgic" ii. 121.) The demand for silk became so great that Aurelian complains that it was sold in Rome at the rate of 12 oz. of gold for a single pound. So great was its value that the silk stuff imported from China was sometimes unravelled, and the precious materials were multiplied by a looser texture, or the intermixture of linen thread and probably wool (See Gibbon's "Decline and Fall," vii. 94). We may thus give an equal, date to the introduction of mixed fabrics and of silk, into Europe.

The introduction into these countries of spun silk with wool may be dated from 1685, when the Revocation of the Edict of Nantes drove over to England's happy shores—principally to Spitalfields and Norwich—upwards of 30,000 skilled artisans from Paris and Lyons. A number of these refugees also settled in Ireland, principally in the metropolis, where they introduced the manufacture of silk and wool mixed, and effected many improvements in the weaving of silk. The mixture of two materials, apparently so different, and the opportunity it gives for novelties, both in style and texture, and for new combinations of colours, requires from the manufacturer a practical and scientific knowledge of no small order. In the Irish tabinets not only have the brightest colours been introduced, but gold and silver tissue have been also employed, with the happiest effect.

The manufacture of tabinets is closely allied to that of silk, velvet, tabarets, brocatelle, and chintzes. Fine specimens of all these will attract admiration in the Exhibition.

The first object of skill that presents itself is the manufacture of poplins, which may be termed a native industry. Three Jacquard looms exhibit, in their several forms, the peculiarity of the manufacture of figured poplins; and the cases immediately adjacent contain some excellent specimens of the plain-work in their several widths and qualities. There is no great consumption, however, for this article, although it is never out of date—being considered, nearly throughout Europe, a kind of bread-and-cheese article, which can be adopted whenever the presentations of fashion happen to fall upon the taste. The principal consumption of poplins is in England; the least, perhaps, in Ireland itself. Since the application of this article to paretots the manufacture has slightly enlarged; but, as that is merely a temporary demand, the ordinary production must soon resume its level. The Messrs. Fry, perhaps, occupy the highest ground in this branch of industry, and exhibit a Jacquard-loom weaving a single-coloured, but beautifully-figured, poplin, which they designate the Dargan Robe, in compliment to the lady of the spirited projector of the Exhibition, at whose ordered it is manufactured. These manufacturers also exhibit the process of winding and warping

the silk, preparatory to its being woven; and, in addition to these in structive examples, they have arranged, in a glass case, the different qualities of raw silk, and appended to each the names of the country where it is produced. Messrs. Atkinson exhibit, likewise, a Jacquard-loom, slightly varied in its structure, but more or less of the same complicated principle of action, and requiring a similar number of cards to form the figure. The same remark may be applied to the loom of Messrs. Pim, both as regards its construction and its producing effects. It would be invidious to distinguish one from the other of these manufacturers, as regards their productions; they are about upon a par, and it would demand a keen and experienced eye to point out the particular make of each. The poplins are now made in widths from twenty to twenty-four inches wide; formerly they were only sixteen to eighteen inches, which rendered them difficult to be economically and tastefully applied. These poplins will never go out of date, as they furnish material for useful dresses for the fair sex; and, as garments made from them sit well upon the figure, from the wiry and elastic properties of the wool, which, with silk, forms the texture, they are generally admired throughout Europe. There are one or two other manufacturers of poplins in the Exhibition; but their contributions do not require particular notice. They consist of articles of the same kind: velvets, silks, poplins—plain, figured, double-shot, and in various other styles; and figured, brocade, and watered vesting, embroidered or ornamented with gold and silver tissue. Messrs. Corder and Co. exhibit, in addition to other articles of this class, some handsome silk curtains, in amber tabaret, with silk fringes; and, in a different, though not less ornamental department of industry, carriage laces, velvet plush, and London cords, for carriage linings, valance fringes and borderings for window curtains, Brussels carpets for coach-makers' use, &c.

WOOLLENS.

Upon minute examination, it will be found that the woollen manufacture of Ireland, as a whole, is at a low ebb, and—with one or two exceptions—much inferior to those of England and the Continent. It was proved at the Exhibition of 1851, that the fine woollen cloths of France were, in a few instances, superior to our own; but, taking the general run of goods, we had no superior, and scarcely an equal. Ireland, on the contrary, ranks nearly in the lowest scale of European woollen-manufactures; and, with the exception of her friezes and elbines, the productions of her looms are scarcely entitled to the appellation of a manufacture. The two exceptional kinds of cloth, however, just mentioned, she manufactures of a good quality, and turns them out in a very marketable condition. There is, also, a peculiar character about the finer kinds of friezes and elbines, which few of our English woollen fabrics can lay claim to; they are honestly put together, contain a true quality of the raw material, and in the wear maintain their beauty much longer than similar goods imitated in England and elsewhere. The same remark may be applied to her blankets, for which Ireland is entitled, to great credit; they are generally finer in the texture than those of England, are much warmer, and will wear longer, although a little higher in price. One, if not the main, cause of the superiority of the Irish blankets, arises from the wool being less carded than that of the English make, and, as a consequence, its wiry elasticity and its cohesive attraction are more effectually preserved. Ireland, also, turns out some decent qualities of tweeds; but she has little chance of competing with Scotland in the manufacture of that article.

The frieze is the most ancient Irish woollen manufacture we read of. It is mentioned in several old Acts of Parliament; and, so early as the year 1382, it is stated that among the articles sent to the Pope from Ireland were five mantles of cloth, one lined with green, and one russet garment lined with Irish cloth.

In succeeding years we occasionally find notices of Irish woollen manufactures, which were exported in large quantities to the north of Italy, Portugal, and Spain. The Irish cadow, or coverlet, was highly esteemed in Italy. Her manufactures continued to improve, and the influx of the Palatines in the reign of James I. added still further to the prosperity of this branch of industry. England being at war with Spain and Portugal, an Act was passed in the year 1627, which recited that "Whereas the kingdom of Ireland, by reason of the peace and plenty it had late enjoyed, is so stored with profitable commodities and merchandise, that they have not only enough for their own use, but for exportation besides;" and concluded by prohibiting the export of Irish woollen goods.

Notwithstanding these discouragements, the Irish woollen trade continued to prosper; and so jealous did the English merchants become, that they induced both Houses of Parliament to present an address to William III. "to use his utmost diligence to hinder the exportation of wool for Ireland." This produced from the King the following:—

My lords and gentlemen,—I shall do all that in me lies to discourage the woollen manufacture of Ireland, and to encourage the linen manufacture there; and to promote the trade of England.

Another Act, passed in 1669, states "that great quantities of wool and woollen manufactures of cloth, serge, baize, kerseys, and other stuffs, made and mixed with wool, have of late been made, and are daily increasing in the kingdom of Ireland, &c., which will invariably sink the value of land, and tend to the ruin of the trade and the woollen manufacture of this realm." The Act then strictly prohibited the export thenceforward, both of wool and woollen goods to any part of the world, except England, from Ireland.

Notwithstanding all these vexatious restrictions, the woollen trade still continued to exist up to the period of the Union. But it stood at this time upon an unwholesome basis. The Irish Parliament, by prohibitive duties, prevented competition; and, by the pernicious system of bounties, endeavoured to prop up, at the expense of the tax-payers, a declining trade: cheapness of production and excellence of material were neglected; and the thoughts of the manufacturers turned to parliamentary aid, and not to individual enterprise. The result of this state of things might have been protracted for a season, but could never have been ultimately prevented. The trade lingered in this unwholesome state till the restrictions upon English importation ceased, and the bounties were withdrawn, when it gradually declined.

The principal woollen cloths at present manufactured in Ireland consist of blankets, which are manufactured in several parts of the island, but principally in Kilkenny; flannels, druggel-cloth, hosiery, tweeds, elbines, and friezes. Some of these, particularly the last two, reflect much credit upon the exhibitors.

Williams Brothers and Co., of Island Bridge, Dublin, are the principal manufacturers of the Irish tweeds. This house supplies clothing for army and navy use; and, until lately, supplied the Dublin Metropolitan Police; and also manufactures tartan trousering for soldiers, caps, and other military requirements. The 16th Lancers were for some time clothed from this establishment, upwards of 14,000 yards of cloth having been supplied; and much satisfaction was expressed at its excellence. This establishment exhibits superfine black cloths, kerseymeres, and doskins; some beautiful "elbina" friezes—a fabric peculiar to Ireland; shepherds' plaids, and fancy tweeds; regulation tartan, for officers, sergeants, and privates; fine shawl woollen yarns, hosiery and knitting yarns, and a variety of other articles.

Logan, of Dublin, exhibits some fine black cloth, napped; and some fine beavered brown frieze; and a gentleman (Mr. Anketell) who has taken much interest in the promotion of industry in his neighbourhood, exhibits specimens of ginghams and other fabrics woven on the Anketell Grove estate.

There are in this department a large number of minor exhibitors, whom we need not particularly mention. They are persons who rest their claim to notice more on the fact of their articles being "Irish manufacture" than on their merit; and, inasmuch as it is generally difficult, if not impossible, for the purchaser to ascertain the locality where the article is manufactured, and the effort to do so is generally a direct premium to fraud, we should strongly recommend our Irish friends, in whose welfare we are deeply interested, to seek success by studying to produce excellence and cheapness combined, and not to rely upon a national caprice, which to-morrow may unmake as to-day has made.

The general impression we obtain from a glance at this department of the Irish Exhibition is that the woollen trade does not appear to stand upon as sound a basis as we should desire. It wants the appearance of stability. The manufacturers, whose capital is generally but trifling—compared, at least, to that invested in some of the great West of England houses—display a sort of restlessness, which does not properly belong to a thriving trade. We shall best express this by an illustration. The importations into Ireland from this side of the water of superfine cloth is very great, and far exceeds anything the Irish houses can supply; the same may be said of tartans, tweeds, and a variety of other fabrics. Ireland at present offers an unbounded market to the native producer of any one of these. Why not, then, select that which is most suitable to the country, and produced at least cost? This would obviously be the interest of the manufacturer; but a restless straining after everything forbids excellence in any. Of the various fabrics of this class

exhibited, the specimens of frieze appear the most likely to prosper. The tweeds, it is true, are excellent; but its very name shows that it is an imitation of a Scotch cloth, and that to force this cloth into the market the Irish manufacturer will have to contend against the skill and capital of the long-established houses of Scotland. But the frieze is a cloth *en genere*, manufactured only in Ireland, and one which has attained excellence by the slow and wholesome process of constant improvements, which can alone give real stability to any manufacture. Paretots of this cloth were some time since presented to his Royal Highness Prince Albert, who expressed his admiration at its great beauty; but, in addition to its excellent appearance, it possesses a durability which is said to exceed that of most other cloths.

Before concluding this branch of the subject we may mention that the manufacture of frieze, both the yarn and weaving of it, is still extensively carried on in all the mountainous districts of the south and west of Ireland in the most primitive manner; and the cloth now made is probably manufactured in the same manner as the mantles were, which we have already said were presented to the Pope in the thirteenth century.

Home-made flannel is also extensively manufactured, and hose. The frieze is generally dyed of a light grey, or dark brown, almost black: the first is the favourite colour. In Munster the skirt of the women's dress is generally of green home-made stuff, and the bodice of a russet colour; but in Connaught the bodice is of coloured cotton, or russet, and the skirt invariably of bright red. The stockings are generally dyed of a violet colour, or a dark grey. These dyes are prepared by the peasantry from traditional receipts; and are composed partly of mineral substances and partly of herbs. Not a few of our most eminent chemists would be sorely puzzled to produce the bright colours some *colleen dhas* on the Connemara mountains will have no difficulty in imparting to her stockings from a few minerals, and herbs called by herself, and not to be found in the "Pharmacopoeia."

Some creditable specimens of elbines, friezes, and tweeds, are exhibited by Mr. R. Allen, of Dublin—not as manufacturer, we believe, although they are all Irish production. The tweeds are excellent in quality, and will doubtless wear well, for they have all the truthfulness of good work about them; though they are not so slightly, nor have they the finished appearance of the Scotch. The blue and black Devon cloths of the same exhibitor are creditable specimens of Irish woollen cloths, and are deserving of especial notice.

Messrs. Willans and Mr. J. Read have, however, the credit of bringing the manufacture of friezes to their present excellence; and, judging by their contributions, we should say that they are fairly entitled to it. Originally these friezes were nothing more than a coarse cloth, made of the rudest materials, and worn exclusively by the peasants; but they are now the chosen fabric of the higher classes, and are converted into habits of singular diversity and taste. This is owing, almost exclusively, to the care taken in the selection and manipulation of the raw material, and to improved methods of working it into a fabric. There is also another point of importance, which is common to all the friezes we allude to, and which renders them such a favourite material for undress clothing—they are mosty subdued in their tone of colour, and harmonise admirably with the general appearance of objects, which is much more pleasing to the eye than strong and glaring contrasts. The light-grey frieze of Mr. Read is singularly quiet in tone, and looks, when made up, of a subdued and gentlemanly appearance.

Mr. John Logan is, likewise, entitled to notice, from the variety of friezes which he exhibits, many of which are highly creditable to Irish manufacture. An embroidered vest, of exquisite contrast in colour, is exhibited by Mr. Dillon, which receives, as it deserves, the marked attention of the passers-by.

From the Irish we shall pass to the English contributions of woollen fabric, many of which are particularly striking in quality and fineness. Messrs. Edgood and Heside have sent a valuable assortment of woollens for male attire, which are unsurpassed in quality. This firm also exhibits some richly-embroidered silk vests, whose pale and subdued tone of colour is not one of their least merits. A specimen of fine West-of-England cloth in this contribution is also deserving of notice, as it marks the immense distance between the Irish and English manufacture of woollens: it is the finest, we believe, that has ever been made; and unites two qualities which are rare in a single piece of cloth—being short-grained and soft, yet possessing the elasticity which is so difficult to obtain in fine cloths, but are generally characteristic of the coarser kinds. This specimen we deem the perfection of manufacture, and the quality it displays has rarely, if ever, been attained before. The hunting cords of this firm are excellent examples of English manufactured woollens, especially the scarlet milled, which is remarkably fine in colour.

Messrs. Hastings, Brothers, of Huddersfield, have sent some specimens of fine cloths, which are rarely to be seen in Ireland. In the manufacture of these woollens, great care must have been taken in the selection of the raw material—a matter of prime importance in all fabrics, but not sufficiently attended to—and it must, also, have been nicely handled before such a result could be obtained. Therein consists the true excellence of British manufactures in general, and of woollens in particular.

The contribution of Messrs. Bull and Wilson, of London, is, however, the richest and most diversified in the woollen section of the Exhibition. It contains, amongst other excellent specimens, two which obtained a prize in 1851, at the world's great show in Hyde-park. Here we have cloths of the finest quality and texture, and of the most exquisite finish; beavers, mix-milled and otherwise, and Angola cloths are equally conspicuous, and seem to challenge competition as to their superiority. Messrs. Day and Fox, of Miffield, have a respectable contribution, whose quality and character fill up an intermediate degree of excellence which is desirable to see in an exhibition of this kind, and clearly indicates that an especial direction of industry is sure to be rewarded, provided it be of a practical and useful nature.

LACE.

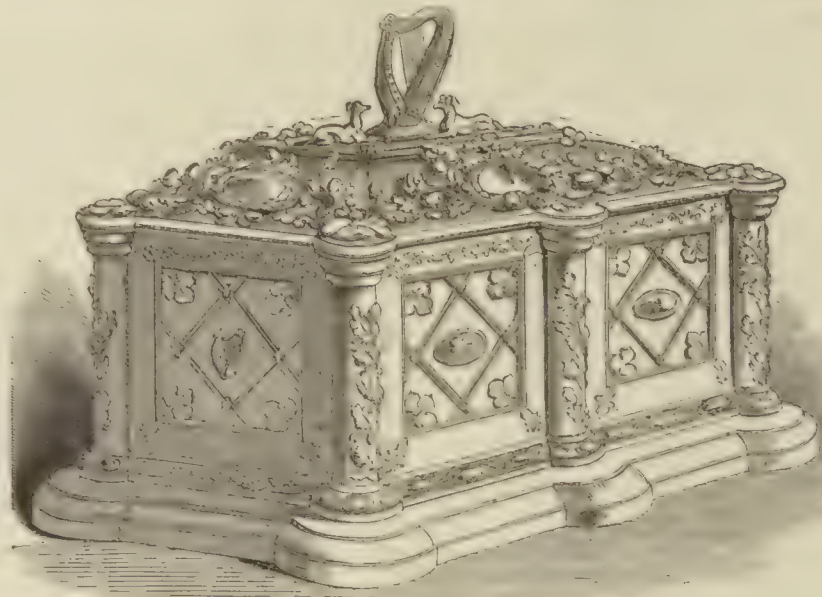
The manufacture of lace in Ireland was introduced, we believe, by Mr. C. Walker, of Limerick, in 1829, and the firm of which he was then a member, employ at the present time upwards of 600 hands at that work. Preceding that period the manufacture of lace, of the character which we are about to describe, was principally confined to the Continent, as neither the Buckinghamshire nor Northamptonshire pillow lace could be compared to it in quality. France and Belgium had almost the exclusive supply of the finer kinds of thread-lace to this country, antecedent to its manufacture in Ireland; and the very names of Valenciennes, and Brussels, are "familiar as household words" amongst the consumers of that delicate article, and still characterise a certain quality of it, wherever it may be manufactured. But Ireland has stepped beyond both these countries, and now makes a quality of lace of different kinds, which would find a ready sale in the French markets, were there no prohibitory duties to prevent it. The appliqué, the guipure, the tambour, and, above all, the beautiful Italian-point, are all produced in Ireland, and are highly creditable to her industrial skill and energy. The export to England is considerable, and forms one of the most beautiful articles of female attire that we can boast of, when comparing our productions with those of foreigners.

The most beautiful contribution of this article, in its several kinds, is decidedly that of Mr. J. Forrest, which forms a leading point of attraction. The contribution is not only tastefully arranged, but the exquisite finish of each article is worthy of special notice. Here we have scrifs, mantles, and robes of guipure and Italian-point, worked in the finest manner, and producing the most delicate and refined effect. The flounces in one or two of these kinds of work are remarkably beautiful, and evince a delicacy and finish of the most graceful order. We would particularly point out the one worked in guipure character, which is exquisitely designed and executed. The robe tambour is, also, worthy of a remark or so, as it is in this kind of work that Limerick mostly shines. The blende-lace worked in gold appears exceedingly rich, and yet, withal, chaste; but the gem of the contribution is the bridal parasol, which certainly is the most exquisite object of manufacture, in its way, that we ever saw. It seems the fitting emblem of one, whom we love to contemplate, "as chaste as ice, as pure as unsmoked snow." The appliqué-imitation is a more useful kind of work, and falls more immediately within ordinary consumption; it is, nevertheless, exceedingly effective in its appearance. This contributor employs upwards of 800 hands in different parts of Ireland, and exports his productions to all parts of Great Britain; and well would it be for Ireland were there others to display the taste and industry that this exhibition indicates in so remarkable a degree.

The next contributors of importance are Messrs. Lambert and Bury, of Limerick, who exhibit, in the Western Gallery, a case containing some beautiful specimens of their industrial art. The shawls, robes, and mantillas display considerable taste in the designs, and are nicely finished. This quality of goods, for the most part, has no pretension to rival the high finish and delicacy of those just mentioned, aiming more at the intermediate and useful—which, as regards the industry of



ROYAL BERLIN PORCELAIN VASE.



CASKET OF IRISH BOG-OAK.—BY ACHESON, OF DUBLIN.

the country, is, perhaps, equally important. This firm employs upwards of 600 hands in the city and suburbs of Limerick, and was established by Mr. Walker, who, as we have already remarked, was the first to introduce the manufacture of lace in Ireland.

Messrs. Reckless and Hickling, of Nottingham,

have contributed some beautiful specimens of the manufacture of lace in England; but it cannot be said to rival that of Ireland, being so different in its character, though by no means inferior in point of quality. The black guipure double-skirt dresses are proofs of how far the skill of manipulation may



ROYAL BERLIN PORCELAIN VASE.



FLOWER-STAND.—BY THE COALBROOKDALE COMPANY.

PARIAN FLOWER-VASE.—BY ROSE AND CO.
GLASS.—BY GREGG AND CO.

VASE.—BY THE COALBROOKDALE COMPANY.

be carried, and how exquisitely it may be applied. The Brussels flounces of these contributors are equally prominent objects of attraction.

Mr. J. Bannister, of Limerick, exhibits a case of a useful class of goods, consisting of veils, mantillas, shawls, and robes, all of which are of a medium quality, and at a moderate price. This manufacturer employs upwards of 60 hands.

Messrs. Harding, of London, also exhibit a case of Limerick lace, which is especially deserving of a passing notice, as it contains some nicely-finished specimens of the guipure class of work. This lace was made by the girls of the National School.

The Society for the Promotion of Irish Industry exhibit considerable variety of this kind of work, and most of it, as far as skill is concerned, of good execution. Nor have we a single fault to find with the taste displayed in the articles produced; but we must express our belief that all these eleemosynary productions only injure the fair trader, and open a door for a certain kind of pseudo-philanthropy. There are, it is true, many worthy individuals who encourage these institutions with the purest of motives, and under the impression that they are benefitting their poorer fellow-citizens; but, when we have made this concession, there is still a positive and inevitable evil inherent in them all; they break down the principle of self-reliance, in addition to inflicting an injury upon the fair and honest dealer. And Ireland, unfortunately, abounds in these institutions—if we may judge, at least, by the Exhibition—at all times an indication that there is something radically wrong in the political and social organisation of a people.

Mr. John Holden, of Belfast, exhibit some neat and truthfully-finished needlework; and a Miss C. Doran has contributed a singular specimen of industry in the form of a dress knotted with Irish thread, and measuring $4\frac{1}{2}$ yards in width, and $1\frac{1}{2}$ yards in length. This delicately-manipulated garment only weighs eight ounces.

Mr. B. Hall, of Olney, has sent a frame which exhibits a series of the Buckinghamshire pillow-laces, all of which appear to be exquisitely finished, and are certainly arranged with considerable taste. These laces, it is stated, are made for Messrs. Groucock, Copestake, and Moore, of London. This contribution is certainly deserving of an especial study, particularly by lace-makers.

The Limerick lace of Messrs. Todd, Burns, and Co., is equally deserving of notice; but, being apart from contributions of a similar nature, is not likely to excite comparative criticism. It is, however, of the finest quality and the highest finish. There is, moreover, some embroidery or crape lisse, executed by poor girls, which is sure to attract attention. And here let us remark that a great portion of sewed muslins, sold at Glasgow and elsewhere in Scotland, as of Scotch manufacture, are got up in Ireland, and are really worked there, labour being so much cheaper in that country than in Scotland.

CROCHET-WORK.

The crochet-work, in one shape or another, forms a prominent object of attraction in the Exhibition. The cause of this is obvious enough; it is the production of females, and its abundance may be attributed

principally to the charitable direction which a great deal of labour of the fair sex has naturally taken in this country. Leaving causes, motives, and peculiar modes of production, however, out of the question, and simply limiting ourselves to the result of this kind of labour, we must devote a few observations to the contribution of Messrs. Marsland, of Manchester, who appear to take the



BOY AND DOG.—BY MULLER, OF BERLIN.



GIRL AND DOG.—BY MULLER, OF BERLIN.

lead in this kind of work. Their case exhibits a great variety of productions, embracing almost every kind of excellence in needle-work, and is peculiarly attractive to those who are adepts in the work. Here we have guipure, embroidery, horse-hair ornaments, and feather flowers, all of Irish manufacture, and each exhibiting more or less the beauty and dexterity of manipulative excellence. The tatting work is peculiarly elegant in its appearance, and appears to have been executed with the nicest care. This firm employs, or takes the produce of, upwards of 2000 hands, and disposes of it in the ordinary markets at a profit, if possible; if not, a profitable remuneration would, it is fair to assume, be afforded them in the sale of the cotton with which they supply the workers, who are compelled, as a matter of course, to use that, or not to be employed by them. The *modus operandi* of this system is obvious; nevertheless, we can scarcely conceive a better condition of things, under the present state of affairs; and the work produced is fully equal to that worked under what is termed a more healthy and independent system. The Royal horse-hair ornaments made for her Majesty are curious, and worth a few minutes of examination, on the part even of the most incurious observer. Sir Thomas Deane has also some work of this kind in the Exhibition, which is the result of charitable labour; but it does not appear under his name; although it is known that he has been instrumental in procuring work in this way for numbers, who must otherwise have been comparatively destitute. The Ladies' Industrial Society for Ireland equally display their charitable labours in the production of crochet-works, most of which appear to be executed with great care and exquisite taste. The guipure and appliqué parasols in this contribution are worthy of minute examination, and will amply repay the attention bestowed upon them. The poor of Benvardeen have some curious needle-work exhibited; a *couverette* in the contribution is especially worthy of note; and the Irish pearl-tatting, by the poor of Kildarrock Ardee, exhibited by Messrs. Ellis, is equally attractive. The Kinsale Industrial School, the Adelaide School, the Ballynaden School, Bandon; and the Halverston School, have each their peculiar excellence in needle-work, crochet, and embroidery; and help, by their industrial contributions to make this section of the Exhibition more interesting and attractive.

THE CENTRAL HALL.

Let us now request the courteous reader to glance with us at the principal things displayed in the Central Hall. The most prominent



TERRA COTTA COURT.

place has been accorded to the clumsy iron summer-house of the Colebrookdale Company; but this arrangement was not rendered necessary by the absence of other articles of interest and beauty. Elevated on a lofty pedestal stands an equestrian statue of her Majesty, by Baron Marochetti. The works of the Baron are well known. His bronze statue of "Richard Cœur de Lion" in our Exhibition attracted much attention;



VASE AND TAZZA, FROM THE ROYAL FOUNDRY, BERLIN.

and his statue of the late Duke of Wellington, opposite the Exchange at Glasgow, is equally admired. As the committee were most anxious to have a statue of her Majesty in the Exhibition, of more than ordinary merit, Mr. Deane, their secretary, was deputed to wait upon the Glasgow committee, to request a cast of the statue of the Queen, modeled by Marochetti. The Lord Provost kindly interested himself with the Glasgow committee, and the result was that the only duplicate of the original model ever made now stands in the Exhibition. The statue will be of bronze, but will not probably be completed for some time.

There are two fountains in the Central Hall—the one of *fer bronze* from the manufactory of André, near Paris, which is very inferior to what we might have expected as the principal fountain; and the other of terra cotta, from Millar, of Glasgow. In the same hall are also placed two angels of bronzed zinc, cast by Devaranne, of Berlin; and Hercules holding a bull, from Grismann, of the same place. A similar group to the last was manufactured expressly for the King of Prussia, and is now at his park at Potsdam. There are also several other statues of bronze, which it will be more convenient to mention in connection with the progress of the foreign and British bronze manufactures. Macdowell's well-known statue of Eve occupies a prominent position at the end of the hall facing Telford's organ. A colossal statue of Mr. Dargan, presented to him by the men in his employment as a testimony of their

respect for him, also fills a conspicuous place.

Along the southern side are a series of glass-cases, containing jewellery, which we have already mentioned in a cursory manner. The cases containing laces, poplins, &c., and some of the looms at work, occupy a similar position along the northern side. Near the Marble Hall is the Terra-cotta Court. Millar, of Edinburgh, and Fergusson, Miller, and Co., of Heathfield, Glasgow, are the principal exhibitors. Among the curiosities exhibited in this department is a plumbago pot (No. 30) which has refined 60,000 oz. of silver, running 60 heats, and melting each time 1000 oz. of silver, at the establishment of Messrs. Browne and Wingrove, refiners to the Bank of England. These operations occupied six days, and the pot was permitted to cool each time. Fire-bricks, tiles, and specimens of terra-cotta and coarse pottery are also exhibited, from various parts of Ireland, where the raw materials exist, in some places, in abundance. There are also specimens in this class from the Naitsla works, near Bristol, and several other, to which we have not now space to allude further. In Venetian and Mosaic pavements, Messrs. Minton, Hollins, and Co., of Stoke-upon-Trent, are exhibitors, and surpass all their competitors.

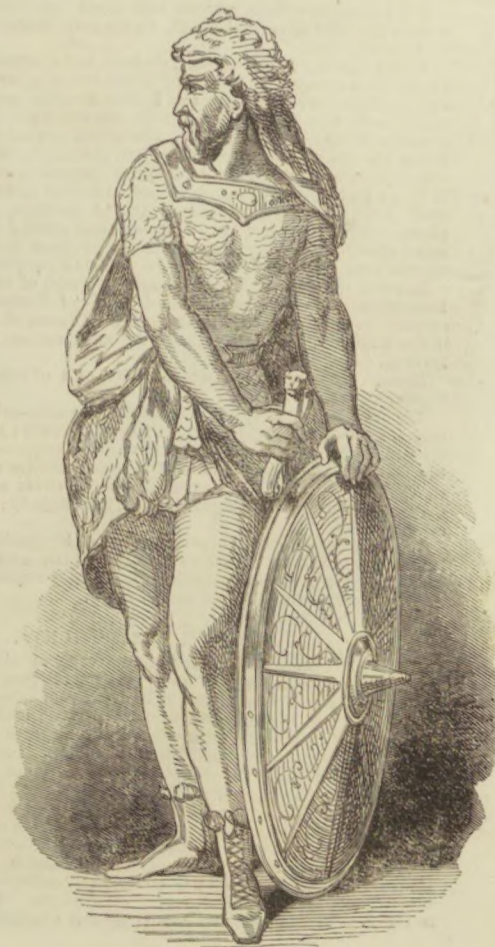
BOG-OAK.

A portion of the Main Hall contains specimens of Irish bog-oak carving. We have mentioned that the bog-oak and bog-yew are found in the bogs of Ireland: generally at a distance from the surface,

sometimes of 40 feet. In some cases the exterior of the wood is slightly decayed; but, if found at a great depth, not only is the wood perfect, but it has generally attained an extraordinary hardness, far exceeding the common oak, and has also become as black as ebony. The yew, found close to the oak, instead of being black, has acquired a rich brown colour, almost approaching that of chocolate. But the colour does not change uniformly as in the oak; on the contrary, the beauty of this wood, which equals in richness of hue the most admired of our foreign timbers consists in the manner in which the natural tints of the timber are enhanced, and rendered stronger by contrast. The oak is very difficult to work, and takes no natural polish, but the yew polishes freely. In fact, if a piece of it be cut with a knife, it presents a polished surface, with every appearance of having been carefully varnished. It may be worked with equal facility in the lathe, and is almost as pleasant a wood for the amateur to manipulate upon as box or ivory. It polishes and carves as easily as walnut; but, being a much harder wood, is preferable to it for all the purposes to which walnut is applied; and, from the natural richness of its tints, it never requires any artificial pigment



WARRIOR.—BY MEVES, OF BERLIN.



WARRIOR.—BY MEVES, OF BERLIN.

to "bring out the colour"—or, in plain words, it does not require dyeing.

Ornaments have been manufactured at the Lakes of Killarney for many years past, as *souvenirs* for tourists who were determined to purchase some memorial of their visit to Ireland. Conolly, who now exhibits, and one or two others, were the only manufacturers of these articles; and they were generally made of the wood of the arbutus, which, though only known in England as a shrub, attains at Killarney, and along the western coast of Ireland, almost the size of a timber-tree. Of late, the great influx of visitors considerably increased this branch of manufacture; and, as the supply of arbutus became scarce, its place was often supplied with the bog-yew. A few years ago the Conollys removed to Dublin, where they opened a small establishment for the sale of articles made of the bog oak and arbutus; and so great was their success that several others opened shops for the sale of similar articles; and there are at present in Dublin upwards of a dozen places in which these articles are sold.

The sale of these ornaments has lately increased very much; and, as the purchasers are generally strangers, they are too often treated as birds of passage, who may be imposed upon with impunity. There are, of course, exceptions; but, in criticising candidly a branch of manufactures which, if properly conducted, would certainly prosper, we do Ireland a service by pointing out the frauds often practised. A few years ago the articles sold as arbutus and oak were made of these woods, and "Irish diamonds" were genuine Irish crystals. Now the arbutus often consists of bog-yew. This we do not object to, as the yew is a more beautiful wood; but it should be sold on its own merits. Again, as it is difficult to work the black oak, ebony is constantly used; and paste is too often substituted for the genuine crystal. The stranger who treasures a black oak bracelet, set with Irish diamonds, as a memorial of a pleasing sojourn, would possibly experience a sense of disappointment if he followed the artisan to the workshop, and found him manufacturing these *souvenirs* of Ireland of ebony from the coast of Africa, and paste from London or Birmingham.

But, assuming that the purchaser obtains the genuine article, he must still be careful about the workmanship, which is often execrable. The crystals are sometimes so badly set, that two or three stones will fall out of a brooch or bracelet before it has been in use a single hour. Instead of being carved from the solid, pieces of wood are often glued together; and glue also forms frequently the only bond of union between the oak and the gold or silver inlaying. We are convinced this branch of manufacture would become prosperous, if carried on with a proper amount of capital, enterprise, and, above all, good faith. From the great demand for these articles, they are sold in many of the larger establishments in Dublin; and we do not hesitate to say, after careful inspection, that the articles sold in the "monster houses" are open to all the faults we have laid to the charge of the manufacturers of these articles. Our strictures apply altogether to the sale of the smaller articles.

We have already described a wine-cooler of bog-oak and silver, after the ancient Irish method, exhibited by West, of Dublin; and a casket, by Acheson. Some of the imitations of ancient Irish round towers, ruins, crosses, &c., as well as work-boxes, inkstands, and a variety of other articles, exhibit not less taste than artistic skill. Mr. Clason, of Dublin, also exhibits a very interesting glass case, containing a series of models of ancient ruins and monuments illustrative of Ireland's ancient history, of the contents of which we subjoin the following abstract:—

Ardmore Tower, one of the most perfect in Ireland, said to have been built by St. Declan, the friend of St. Patrick, about the year 402. Antrim Tower, which bears strong indications of Christian origin, having a cross in bas-relief carved on a large stone on the outside lintel. Monasterboice, county Louth, an abbey which was founded by St. Beete, or Boetius, who died in the year 521. On the south side are two elaborately-sculptured stone crosses, the one 18, the other 16 feet high, considered amongst the most ancient relics in Ireland. Clonmacnoise, the interesting remains of which occupy a very romantic position on the banks of the Shannon. This great tower is one of the largest in Ireland. There are eight apertures in the upper story, which is unusual in other structures. Donoughmore Tower, county Meath. Castledermot, county Kildare. Dumbrod Abbey, county Wexford, founded about 1182, by the celebrated Harvey de Montmorency, Marshal to Henry II. The Rock of Cashel, which, it has been remarked, presents a magnificent display, to be found nowhere else, of every variety of ecclesiastical architecture—round and square towers, stone roofs, crypts, and shrines; arches in the Saxon, Roman, and Norman styles—all in one common ruin. Amongst those Corncrag's Chapel is one of the best preserved buildings of that age. The roof is of stone, and finely groined. The ancient cathedral is an extensive and beautiful Gothic structure. The round tower is very perfect; and there is a subterranean passage, leading to several other ruins, containing ancient pieces of sculpture with interesting inscriptions, recently discovered. Clondalkin Tower, near Dublin, 84 feet high and 15 feet wide. Downpatrick Abbey, with the tombs of St. Patrick and St. Columbkille. Within a few years these interesting ruins were demolished for the sake of the building materials! The Abbey of Ennis, erected in 1240, and for a long time the place of sepulture of the Princes of Thomond, and the sept of Macnamara. Glendalough, one of the most celebrated ecclesiastical institutions, founded by St. Kevin, who was born in 498. The round tower here, 110 feet high, is in fine preservation. Howth Abbey was founded in the year 1307, and here was preserved the book of the four Gospels, called the "Garland of Howth," and long held in great veneration. Kildare Tower is in good preservation. Lusk Monastery, county Dublin, which bears date 497, and has suffered several times from fire, and been plundered during the early civil wars. Loughrea Monastery, founded by Richard de Burgho, in the year 1300. Jerpoint Abbey, county Limerick, founded in the year 1180. Swords Tower and belfry, the remnant of an abbey founded in 612, by St. Columbkille. St. John's Abbey, Kilkenny. Kineagh Tower, county Cork, now 70 feet high, and of a peculiar form, the base, to a height of 15 feet, being a hexagon. Mucross Abbey, at the Lakes of Killarney—an interesting monument of antiquity. About sixty years ago a devotee took up his residence in it, and lived in it for twenty years. The bed in which he slept was formed of coffin boards which had been strewn about, and was placed in one of the recesses of the windows. Ross Castle, founded by the O'Donoghues. Devenish Tower and Abbey, near Enniskillen, founded in the sixteenth century. The Magdalene Steeple, near Drogheda; and St. Declan's Holy Well, about four miles from town, on the Malahide road.

This collection will be viewed with great interest. The models are made with truthfulness, and will, we are sure, induce many tourists to visit the originals.

Whilst alluding to this subject, we may be permitted to criticise what appears to us very bad taste. It is the erection in the Great Hall of ancient Irish crosses of Tuam and Kells; they are undoubtedly of great value to all who feel an interest in ancient Irish art, and the early spread of Christianity in Ireland; but in the Central Hall of the Exhibition, close to the ever-busy looms, and to the gorgeous display of laces and pearls, and other vanities, they are, beyond question, out of place. If in the Exhibition at all they should have been in the Hall of Ancient Irish Art; but we should never like to see them removed from the places where they have stood stately and erect for ages amidst the many changes and exciting incidents that those localities gave birth to, and from which the crosses derive no small portion of their interest.

In black oak carving Mahood exhibits a model of the Round Tower of Donoughmore, and of the Cross and Tower of Monasterboice, which we suspect the artist never saw. Casts of the Crosses of Monasterboice are in the Exhibition, and are perhaps the most curious and interesting in Ireland.

Mosley exhibits a richly-carved jewel-case of bog-yew, representing St. Canice's, Kilkenny, &c.

The other principal exhibitors are M. Connell—arbutus tables, chess tables, work-boxes, and ornaments in great variety; D. Connell—similar articles, with carved models of ruins, &c.; and Goggin—a candelabrum in bog-oak, ornamented with Irish diamonds, from the design of the Duke of Devonshire; a casket in oak, mounted in silver and Irish diamonds, designed by the Earl of Eglinton, for her Majesty; and a variety of other articles.

We trust the salutary discretion exercised by purchasers will gradually lead to improvement; and we entertain little apprehension but that greater perfection and fair dealing are the only requisites to increase the demand for this manufacture considerably.

MUSICAL INSTRUMENTS.

It must be confessed that Ireland, throughout all her troubles, and with all her shortcomings of industry, has preserved a nice appreciation of art. Whatever may be her delinquencies in other respects, she pays great homage to the beautiful and intellectual, whether it be embodied in painting, in sculpture, or in music; and no greater proof can be adduced of the warm sympathies and mercurial feelings of the Irish character than the crowds which linger in the picture gallery, and gather round the several pieces of statuary. Nor is music less admired among our lively neighbours; for Dublin, we believe, is one of the most musical cities of Europe, although she may not indulge in so many public concerts as her more affluent contemporaries. The truth is, that music is cultivated in private life to a great extent in Dublin and other places in Ireland; and it is this kind of cultivation, more than public concerts, that stamps the musical character of a people. That this is the case in Dublin, there can be little doubt; for it is a well-established fact that

instruments of the most expensive kind find a sale there, and that large numbers of moderate-priced ones are annually disposed of. Upwards of one thousand pianofortes are imported from the great London manufacturers every year; and that number is exclusive of other kinds of musical instruments, for which there is a considerable demand.

The display of musical instruments in the Exhibition is, therefore, somewhat imposing; and deserves a more extended notice than our space permits. We shall, however, endeavour to do justice to it.

Of organs—that "monarch" of musical instruments—there are two, situated one at each end of the Great Central Hall. The largest, at the west end, by Messrs. Telford, of St. Stephen's-green, already mentioned, was built for the College of St. Peter, Radley, Oxford, and is in a case of solid oak, in the Gothic style, the choir organ being placed in front. Some of the pipes are of pure tin, polished and burnished; there are three rows of keys, from C to G in alt; the pedal organ from C to G, two and a-half octaves, six composition pedals, five copulæ, and fifty stops. The great organ contains 1146 pipes, the small organ 1003, the choir organ 356, and the pedal organ 416; making a total of 2921 pipes. The tone is excellent; and, altogether, it is highly creditable to Irish manufacture. Dr. Stewart, one of the finest organists in the United Kingdom, performed on it with great effect, and his masterly touches elicited sounds that can scarcely be conceived, and which will long be remembered by those who heard him.

Messrs. Bevington, of London, exhibit an organ on a smaller scale, which is placed over the entrance of the Central Hall. It is in a carved Gothic case, with gilt speaking-pipes in front, and the tone is singularly rich and mellow. There is another London organ by the same exhibitors, in a carved cabinet rosewood case, which is also an object of attraction.

The contribution of pianofortes is exceedingly good, and comprises specimens from the leading manufacturers of London: the Messrs. Broadwood, Collard, Erard, and Kirkman, have sent their several instruments, which make up a most imposing display. Some of these are exhibited by the manufacturers themselves; others by the great music-sellers of Dublin. Mr. Marcus Moses, of Westmoreland-street, has contributed a number of instruments, among which are some elegant Gothic harps, in walnut and satin-wood, manufactured by Messrs. Erard. There are also several grand and oblique pianofortes by the same maker. The grand piano in Amboy-na-wood, manufactured by Broadwood, is equally attractive; so also are the massive and highly-finished squares of Collard, in mahogany and rosewood, and the carved cottage, in walnut-tree-wood. Mackintosh, of Rutland-square, exhibits, both in the Central Hall and in the Gallery, a varied assortment of pianos, combining almost every shape and description, and comprising the makes of Broadwood and Kirkman, of London, and others of inferior note. The Messrs. Kirkman, however, are the largest exhibitors on their own account, and fill a large space in the Central Hall with their instruments. Here we have specimens of the most elegant and costly pianos—the grand, the semi grand, the oblique, the cottage, and the piccolo; exhibiting the various improvements that have been lately effected in that much-desired instrument. The principal of these instruments are distinguished for the novelty of their construction, and the high finish which has been bestowed upon them. The concert extra-grand, for example, in rosewood, having seven octaves of great volume, clearness, and brilliancy of tone, is remarkably effective. The semi-grand, also, in French walnut, with seven octaves, with Brazilian tulip-wood inlaying and bands, is a beautiful specimen of simple and plain cabinet work; while the shape and line of the case, with its finely figured wood, is exceedingly graceful. The upright piano, exhibited by these manufacturers, called the oblique grand, in rosewood, with seven octaves, is well worthy of remark. This instrument occupies no more space than an ordinary piccolo piano, with a slight extension of the ends, and is nearly equal to the horizontal grand in the rich and powerful quality of its tone. This character of piano has long been a failure, particularly to its not keeping tune and up to the concert-pitch. These manufacturers, however, have obviated the difficulty by applying metallic bracings and a string plate, notwithstanding the difficulties of the scale and construction. By this means the instrument is made most effective, and gives out the fine tone of higher-classed pianos; it also occupies less space than ordinary instruments, and from its upright form it is susceptible of more elegance and ornamentation in its shape. Another advantage arises from its diagonal construction; the requisite length of string is obtained without increasing the height, which peculiarly adapts it for accompanying the voice. The semi-oblique cottage, of this exhibitor, with seven octaves, a patent double-repeating action, and three strings, in pollard Irish oak case, is especially attractive, from the fine grain of the wood. Placed in juxta-position with a case of Amboy-na wood, this oak appears to great advantage; and it would require a peculiar judgment to determine the superior beauty of the two. The Amboy-na wood is brought principally from Ceylon, where it attains enormous growth, sometimes measuring twenty feet in girth; the wood, which obtains a high price in the English market, is merely an excrescence, or disease, which grows out of the side of the tree, and is of a gnarled character of grain, peculiarly hard, and susceptible of a high polish. From the nature of its growth, it can only be obtained in small pieces, is usually cut into veneers, and is employed in the finer branches of cabinet work. The pollard oak is nearly of the same growth, and has a similar character of grain; and it is singular that, while we are importing large quantities of the Amboy-na from Ceylon, we are neglecting the pollard-oak in our country, in which it more or less abounds, and especially in Ireland. A comparison of the rich tortoiseshell-like appearance and fine figure of the oak in question, with the Amboy-na, on the stand of Messrs. Kirkman, will soon convince even the sceptical which is the more beautiful wood of the two. Sufficient attention, we regret to say, is not paid to the beauty and grain of our own-grown woods; for the walnut, the pollard-oak, and even the elm, under certain conditions, have their peculiar beauties; and in some respects equal, if not superior, to many foreign in great request. Mr. Mile exhibits some well finished corneans, and other instruments of Irish manufacture, which attract, as they deserve, particular attention from the musical spectators. H. Russell, of Dublin, exhibits some pianofortes, of London make, which are creditable specimens of that class of goods. J. Scates, of Dublin, has, also, some concertinas, which have their peculiar excellence; and Rudal, of London, has contributed his flutes, which, for workmanship, are equal to anything of the kind in Europe. G. Metzler, of London, and Messrs. Allison and Cadby, of the same place, have sent specimens of their respective excellence in the manufacture of pianofortes, which the "Dubliners" fully appreciate and deservedly encourage. In the foreign department there are but few musical instruments; Austria has forwarded a few brass instruments, whose principal recommendation is their cheapness; and Belgium, in the person of M. Jastrzebski, manufacturer to King Leopold, exhibits three upright pianos, which are more curious in construction than effective in tone or quality.

MANUFACTURED METALS.

If we except one or two manufacturers of deserved note, there are few contributors of importance in metal articles. Ireland, as we have remarked, has no pretensions to this class of industry, therefore the contributions are almost exclusively confined to those from England. Mr. De Berque has sent a case of reeds, used for the warps of textile fabrics, which suggest an instructive lesson to the spectator, if they do not exhibit a good quality of work. Here we have reeds for cottons, silks, and woollens, ranging from eight to eighty dents to the inch, according to the relative fineness of the thread which is placed on it. The same exhibitor has also some iron waggon-buffers, drawsprings, single and joint chairs, for railways, which appear to be well manufactured. Eastwood and Frost, of Derby, have some railway carriage-wheels, and other specimens of the manufacture in its several stages, which are well worth a passing inspection; and Whitley, of Ashton, Warrington, exhibits a fine collection of hinges, for ecclesiastical purposes, made of wrought iron, which seem to be of excellent workmanship. Moffit's iron safes occupy a prominent position; but Milner's Patent Holdfast and Fire-Resisting Safe is the object of the greatest attraction, from the fact of its preserving a £100 note from destruction, after being exposed for a length of time to the most intense heat. The Lord Mayor of Dublin, having witnessed the circumstance, has testified on the back of the note to the truth of it.

Curtis, of Dublin, exhibits several specimens of brass work, in the form of cocks and other useful articles; and the same remark may be made of the contribution of James Billinge, who exhibits similar articles. Adam Jack, of Bristol, has contributed some rather fine specimens of tin plate; they are remarkably fine in colour, elastic, and well grained. Thornton and Sons, of Birmingham, have contributed a variety of useful articles in metal work, which fill up, usefully, considerable space; and John Hawkins, of the same industrious hive, has sent a case of screws, which appear remarkably well made, but whose quality can only be determined by practical application.

Chapping and Selby, of Oxford-street, London, exhibit some excellent specimens of horse-shoes, for almost every conceivable kind of hoof,

whether sound or unsound; and Dyce's Repository, of Dublin, have sent a similar contribution. Bryan Corcoran, of London, has some curious specimens of wire for flour machines, which are worthy of note; and Daniels, of Dublin, furnishes a rare assortment of ironmongery and other metal articles of domestic use, which attract due attention. Hodges and Sons, of Dublin, have erected an economic cooking-range, with all the et ceteras of so useful a piece of construction; and Taylor, of London, with his finely-executed copper-work, is no less conspicuous, and exhibits workmanship in metal which is rarely equalled, and never, we apprehend, surpassed. Thomas Hodges, of Dublin, exhibits coils of water-pipe, one of which runs to the length of 1250 feet, and weighs 24 cwt.; and Chubb, of London, has a series of new locks, which exhibit his usual excellence in mechanism, and, no doubt, safety, for no Irish Hobbs, as yet, has ventured to pick his last new patent. Henry Pooley and Son, of Liverpool, have sent their ingeniously-constructed weighing-machines, which attract general attention—and deservedly so; while Kent, of London, with his knife-cleaners, astonishes some of the far-country Irish, who can scarcely conceive what such machines can be intended for.

Gillot, of Birmingham, has contributed admirable specimens in the steel-pen department; and Johnson and Cammell, with great liberality, have sent an illustration of their unequalled excellence in the manufacture of steel; and the Atlas Works have contributed a series of lamps, which are among the finest ornaments in the Exhibition.

Finally, the Vieille Montagne Company have sent specimens of their excellence in zinc, both in a manufactured and in a raw state, which occupies a more than ordinary space, and is well deserving of a separate and attentive study; and Benham and Sons, of London, have constructed a rather ornamental platform, against which their various grates and fire-irons appear to great and (judging by their appearance) deserved advantage.

COURT OF ANCIENT IRISH ART.

Before we venture to give any minute description of the contents of the Museum of Irish Antiquities, added to the Great Industrial Exhibition of 1853, it may be well to explain certain matters connected with it, as many well-informed people are at a loss to know why it is that the antiquities of Ireland are made to form a part of the Great Exhibition?

To mere utilitarians, it may be said, the collection of antiquities exhibits, so far as it goes, evidence of the state of the arts and manufactures in Ireland at different and distant periods. It thus enables visitors to compare the past with the present, and decide on the amount of progress, if any, in certain departments of the arts. It also leads to the recovery of lost, or almost forgotten, arts, designs, and manufactures, which may possibly be revived advantageously to the public or to private individuals.

On the other hand, the antiquary and ethnologist may find in the collection evidence bearing upon that ancient trade and manufacture in Western Europe, which is indicated in many passages in the Bible; and to which, coupled with civilisation of the highest kind, the myths of the Egyptians and the Greeks—relating to the Gardens of the Hesperides, the Island of the Atlantis, and the visit of Hercules to a certain island on the coast of Spain, whence he stole the famous breed of cows—all point; but which neither the Greeks nor the Egyptians, nor, indeed, any other Eastern people, appear to have had any certain or exact tradition of in the time of Herodotus. It is, however, quite clear, from many passages in the Old Testament, that from three to five hundred years before the time of Herodotus, a very considerable direct trade and intercourse existed between the West and the East. The evidence is altogether in favour of that trade having proceeded originally from the West towards the East; and not, as is generally supposed, from the East towards the West. The formation and maintenance of this trade is undeniable evidence of the existence in the West of Europe, and, especially, in Spain, of early civilisation, equal to, or greater than, any which ever developed itself, even in Egypt.

It is a curious fact, not noticed by modern writers on the ancient Egyptians, that their great deity, Vulcan, or Pthah, was a smith, or worker in metal; and if he were Tubal Cain, as is generally supposed, according to the book of Genesis, he was a worker in both iron and brass—neither of which materials is found native in Egypt or on the Nile. Local Basque and Spanish tradition claim Spain as the original habitat of the race of Tubal Cain, Vulcan, or the Smith; and, though traces of copper mines and furnaces have been found in and near Lower Egypt, and though the name of Egypt may have been originally adopted by the Greeks, from the fact of its having been known to them as the land of copper—a name which its natives never adopted—still, it is to the West we must look for the original habitat of the race of Vulcan, and of that religious system which developed itself in such an extraordinary manner in Egypt, probably in the hands of the copper-workers, who may have brought their craft from the copper mines of Spain and Western Europe.

It so happens, that the Egyptian copper district lay to the east of that country; but still it is to the West—and the very far West—the ancient worshippers of Vulcan looked for their paternal homes. It was there they placed, with the setting sun, their Aminto, or place of their dead ancestors. The door of the Temple of Vulcan first fronted the West; it was changed again and again, so that at last it appeared as if the place of the cardinal points themselves had changed, as the Egyptian priests explained to Herodotus, who, with other Greeks, had previously observed this fact, which tells altogether against the local origin in Egypt of the worship of Vulcan, and points to the West as the place from whence even the first dawnings of Egyptian civilisation came. It is from that quarter we should look for those first dawnings of primitive civilisation, as manufacture and trade, which, somehow, the Egyptians appear to have received in a state of great perfection from the Europeans, or the Gentiles, as they are called in the early writings of the Jews.

In the East, civilisation, as we call it, is clearly due to Greek influence; but it is not remembered that the Greek was only one branch of the great Japhetic family; and that the same instincts, feelings, sentiments, belonged to all the other branches of the same stock. War and love were the great motive powers of the men of this race; the Greeks formed themselves into political associations for the purpose of aggressive and defensive war. The proximity of the great Asiatic and African despotisms led them to unite for mutual protection; and this union led to their extraordinary development of mind and civilisation, which, under other circumstances, growing out of personal rivalries, would have been lost in petty jealousies and warfare.

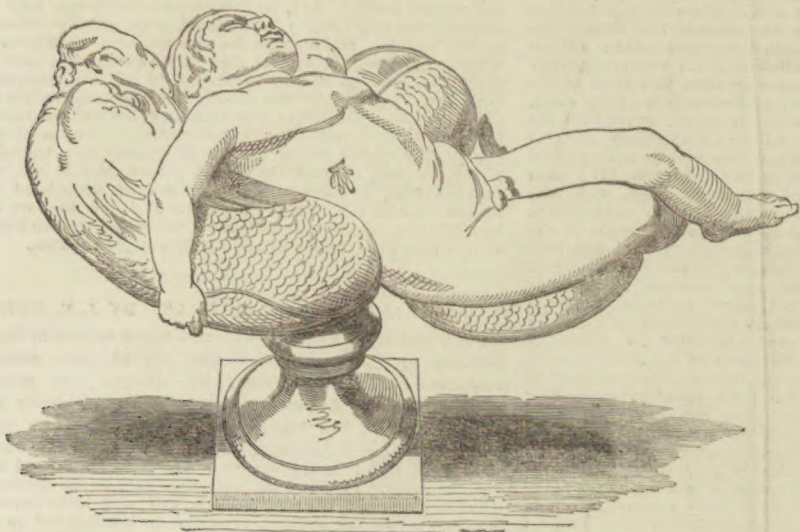
If this pressure in the East kept the Greek or Japhetic people at peace with each other, during a certain time in the West of Europe, no influence of the kind operating, they appear to have fallen into a state of perpetual and mutual warfare, and to have lost the benefits described by the Greek poets, which the Japhetic race enjoyed in the Golden and Silver Ages— indefinite periods preceding that which they denominated the Age of Bronze, or of warlike weapons, in which the poets and earlier historians lived or wrote. With the Greeks this time may be considered as coming down almost to the era of Alexander, when iron and steel weapons, at least in the East, were fast supplanting those made of copper and bronze—the latter metal being used generally for other purposes, for which it was preferred; but in the West of Europe, the material of swords appears to have been bronze; and at a very late period indeed, we have reason to believe bronze or brass spears were in use in Ireland, as they are still said to be in some parts of Central Asia.

The quantity of swords and spears, made of bronze, found in Ireland is so great, compared with the finds in all other European countries put together, that one might almost infer that Ireland had been the battlefield of the whole of ancient Europe; for the number of bronze weapons in the collection of the Royal Irish Academy alone, independent of the other private collections in and not in the Exhibition, is vastly greater than those in all the English, Scotch, and Continental museums put together. The inference is inevitable, that, at the period within the era called the Bronze Age, Ireland must have been the seat of petty warfare, in which the parties met and fought with bronze swords, spears, &c.

The "Annals of the Four Masters" give us the real or estimated date B.C. 500, as that of the Milesian Invasion, when bronze weapons may be considered as having been in common use here in the West, as they were then in the East; the swords being the same, apparently, in shape, and, probably, brought here and into Greece ready-made from Spain. Hitherto our attention has been directed to the East for the elements of ancient civilisation. We have not looked in Western Europe for those manifestations of mind in ancient times which, in our own era, are the elements of Asiatic and African civilisation.

If Solomon's statement be true, that there is "no new thing under the sun," then are we warranted, for the sake of argument, in assuming that the European race formerly, as at present, visited Egypt, and Syria, and other countries, for the purposes of trade and commerce, and, consequently, for civilisation. It is generally admitted that the ancient Egyptians were not, at any period, a maritime people; and, though the Tyrians, Sidonians, and Pelusians all were, at certain times, highly mercantile, and had ships of their own; yet more anciently, it is clearly stated or implied, in numerous passages in the Bible, that the ships which visited and traded to the coasts of Egypt and Syria were not native ships, but "ships of Tarshish"—ships which came from the West, and not ships which went from the East, except when the fact is so stated. The

PLAN OF THE DUBLIN EXHIBITION.



MARBLE CUPID AND DOLPHIN.—BY RAFFAELE.

The Dublin Exhibition boasts of the possession of one of the most interesting bijoux of sculpture in the United Kingdom. It is a lovely statue of a Child borne by a Dolphin; which, in addition to the exquisite grace and almost perfection of execution of which it can boast,

is singularly white, and highly polished, which adds also to the beauty of the group. It is impossible to view this statue without reading in every trace the skill of a great artist, confident in his own powers, and master of his subject.

derives additional value from the fact of its being one of the only two works from the chisel of Raffaele in existence. Sir Charles Eastlake, who has constantly lent his valuable aid to advance the fine arts portion of the Irish Exhibition, in a letter to John C. Deane, Esq., one of the secretaries, pointed out the propriety of soliciting Sir Henry Bruce to exhibit this gem of art.

"The Committee" he wrote, "are probably aware that a statue of a Child borne by a Dolphin, by the hand of Raffaele, is in Ireland. It was brought to Ireland by the Earl of Bristol, Bishop of Derry, and it is now in the collection at Down-hill. There are but two statues which have been admitted by the best critics to have been executed wholly, or in part, by Raffaele. The 'Jonah,' in the church of S. M. Del Popolo in Rome, and the statue of a child above mentioned. A cast of the latter is preserved in the Dresden Gallery with great care, the original being supposed to be lost."

The child has a wound in the side, and is in a state of insensibility, whilst the dolphin supports him in a graceful manner, holding him, at the same time, by the hair. The whole is particularly interesting and graceful. The dolphin, notwithstanding his grotesque form, appears quite natural, and there is a simplicity and a total absence of any effort at effect from the artist which completely captivates. The marble of which it is made

INTERVIEW OF MR. RONEY WITH THE PRINCE PRESIDENT OF FRANCE.

At an early stage of the arrangements for the Exhibition, it was decided that Mr. Roney should visit the Continent, for the purpose of securing the co-operation of the principal manufacturing countries of Europe—foremost among which was France. An interview was sought by Mr. Roney with the Prince President, and graciously accorded on Sunday, the 24th of October last; and our artist has faithfully pictured the scene at the Palace. The apartment into which Mr. Roney was ushered is a handsome room, about thirty feet long by eighteen wide, on the first floor of the portion of the Palace of St. Cloud occupied by the then President Louis Napoleon—this being the apartment in which the Ministers assembled. In the centre was a long table, furnished with writing materials, and around it were placed chairs, high-backed, and covered with green velvet. Immediately on Mr. Roney reaching the Palace, and sending up his letter of audience, he was conducted by an English servant to the aides-de-camp room, by one of whom he was taken in charge to the above apartment for the interview. Having entered, he was requested by the aide-de-camp to wait; he then withdrew, and in half a minute returned, announcing "Le Prince President." His Highness slightly waved his hand, the aide-de-camp retired, and the door was closed. The Prince, approaching Mr. Roney, spoke in English, and said, in the most graceful and cordial manner, that he was happy to see him, and requested him to be seated; and, seeing that Mr. Roney hesitated, the Prince repeated the request.

Mr. Roney explained to the Prince the origin of the Exhibition, and the generosity of Mr. Dargan; adding that Ireland was beginning at last to raise herself from her melancholy condition.

The Prince made several inquiries respecting Mr. Dargan; and Mr. Roney then explained the object of his mission to be a collection of the manufactures of Sevres, the Gobelins, and Beauvais; for which purpose he requested to be favoured with facilities in the public offices, and permission for the goods designed for the Exhibition to leave and return to France free of duty. The Prince graciously replied—These are requests easily granted (and he has completely fulfilled all his

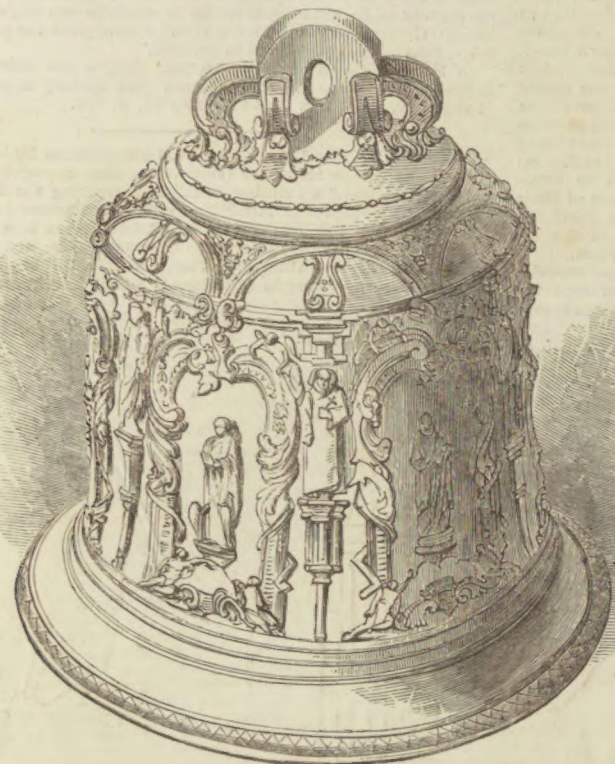


STATUE OF MR. DARGAN.—BY J. E. JONES.

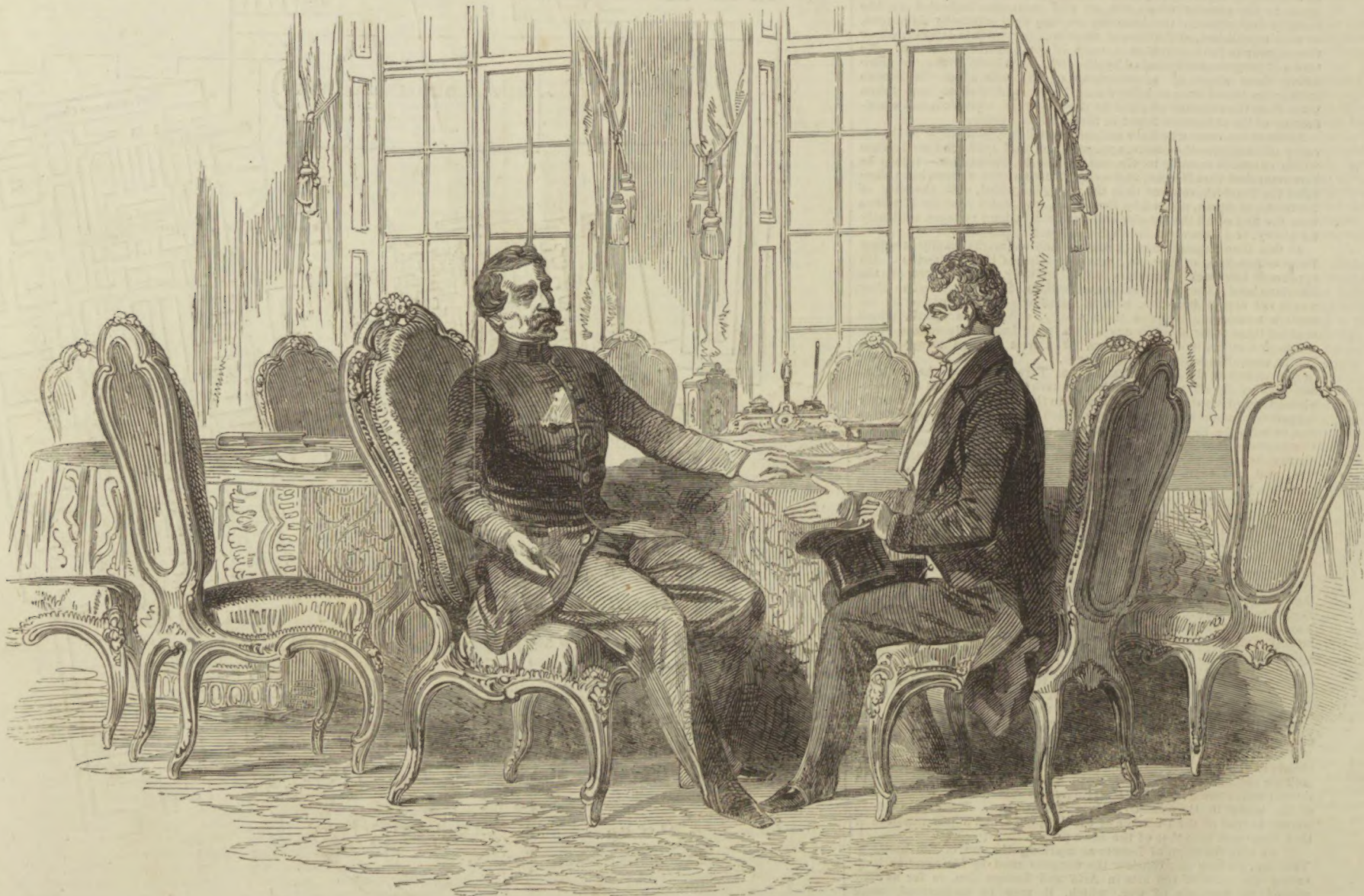
promises). Mr. Roney having expressed his gratitude for the Prince's condescension and kindness, rose and retired.

We should add that during Mr. Roney's stay in Paris he and his family received the most cordial attention: were invited to the grand ball, given by the Senate and Legislative Body, and the Municipality of Paris, to the Emperor and Empress. Mr. Roney's family were also presented to their Imperial Majesties, and invited to the Tuilleries; for which distinction Mr. Roney has expressed the warmest personal gratitude.

We are gratified to learn that the services which Mr. Roney has rendered in connection with the Dublin Industrial Exhibition are to receive well-merited recognition at the hands of her Majesty's Government. It has been officially intimated to Mr. Roney that the Lord-Lieutenant would confer upon him the honour of knighthood early in October, when the Exhibition will be brought to a close.



BELL (BELGIUM).—BY VANDERSCHOTT AND VANERSPEN.



INTERVIEW OF MR. RONEY WITH THE PRINCE PRESIDENT OF FRANCE, AT THE PALACE OF ST. CLOUD.